# DOES THE NORTHEAST NEED A PUBLIC HEALTH CADRE?

A Study of Four North Eastern States, March 2022

Centre for Budget and Policy Studies

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## Abbreviations

| | |
|---|---|
| AAGR | Annual Average Growth Rate |
| ADMHO | Additional District Medical and Health Officers |
| AIDS | Acquired Immunodeficiency Syndrome |
| ASHA | Accredited Social Health Activist |
| CDC | Centers for Disease Control and Prevention |
| CDs | Communicable-Diseases |
| CHC | Community Health Centres |
| CMO | Chief Medical Officer |
| CSS | Centrally sponsored Schemes |
| DALY | Disability-Adjusted Life Years |
| DH | District Hospitals |
| DHS | Directorate of Health Service |
| DMHO | District Medical and Health Officers |
| DoHFW | Department of Health and Family Welfare |
| DPM | District Programme Manager |
| DPMU | District Programme Management Unit |
| DSO | District Surveillance Officer |
| EPHF | Essential Public Health Functions |
| ETL | Epidemiological Transition Level |
| GDP | Gross Domestic Product |
| GoI | Government of India |
| GSDP | Gross State Domestic Product |
| IAS | Indian Administrative Service |
| ICMR | Indian Council for Medical Research |
| IDSP | Integrated Disease Surveillance Programme |
| IEC | Information Education Communication |
| INR | Indian National Rupee |
| IPHS | Indian Public Health Services |
| JD | Joint Director |
| MBBS | Bachelor of in Medicine and Bachelor of Surgery |
| MCH | Maternal and Child Health |
| MHC | Maternal Health Care |
| MHO | Medical and Health Officers |
| MI | Medical Institutions |
| MMR | Maternal Mortality Ratio |

| | |
|---|---|
| MO | Medical Officer |
| MPH | Master of Public Health |
| NCD | Non-Communicable Diseases |
| NE | North Eastern |
| NEC | North Eastern Council |
| NER | North Eastern Region |
| NFHS | National Family Health Survey |
| NHM | National Health Mission |
| NSS | National Sample Survey |
| OB/GYN | Obstetricians-gynaecologists |
| PCI | Per Capita Income |
| PH | Public Health |
| PHC | Primary Health Centre |
| PHE | Public Health Expenditure |
| PHED | Public Health Engineering Department |
| SC | Sub-Centres |
| SDMHO | Sub Divisional Medical and Health Officer |
| SPMU | State Program Management Unit |
| ST | Schedule Tribes |
| TB | Tuberculosis |
| THE | Total Health Expenditure |
| WB | World Bank |
| WHO | World Health Organization |

# Executive Summary

The World Health Organization (WHO) defines Public Health (PH) as, 'the art and science of preventing disease, prolonging life and promoting health through the organised efforts of society. Public health is frequently used synonymously with provision of clinical services or health care services. Clinical health deals with individual health care as opposed to PH that concerns itself with the health of the entire population. The idea of establishing a Public Health (PH) cadre in India has long been the intent of policy planners in the country and has firmly taken root following the disaster left behind by the COVID pandemic.

This study focuses on the need and challenges of having a PH cadre in the North Eastern (NE) states of India, with a specific focus on four states: Assam, Manipur, Meghalaya, and Nagaland. We used a combination of research methods, which included expert consultations, literature and policy reviews, personal interviews of stakeholders, and primary and secondary data analyses to evaluate the prerequisites for a public health cadre in the above states. Semi-structured interviews with government officials and consultations with PH experts (from non-governmental organisations, academia, and retired officers) were conducted to gather their perspectives on the need for a dedicated PH cadre, its implications and challenges, cadre structure, eligibility and qualifications, pre-conditions for having a successful cadre, and other foreseeable advantages and limitations. An attempt was also made to understand the extent to which the current health care system in the four states incorporated the WHO's 12 Essential Public health functions (EPHF) by administering an EPHF mapping tool to district level health officials.

The study was conducted between the second and third waves of COVID-19, which led to cancellation of field plans. We had limited success in administrating the EPHF mapping tool as officials were unable to give us information beyond their programme area as they were also extremely burdened with COVID duties and hence were unable to spare time for interviews. Other challenges included the non-availability of documents with description of roles and responsibilities of the PH leadership/management with the health departments.

The North East Region (NER) houses 7.9% of India's population. All of the North East states have to overcome geographical challenges including frequent floods, landslides as well as being in the high risk seismological area. This makes provision of infrastructure and therefore transport difficult. The states' also have low own source

revenue and are hence heavily dependent on the central government for funds. Most central government schemes in the NER are funded in the ratio of 90:10 with the state's contribution only being 10 percent. This holds true for the National Health Mission (NHM) as well, which undertakes expenditures on almost all areas of public health within the health department. In Assam, Meghalaya, Manipur, and Nagaland, NHM expenditures averaged to more than 50% of their PH expenditure, as per the individual state budget analysis between 2018 to 2021. Due to its high monetary contribution to health expenditure in the NER states, the NHM wields greater influence on decision making processes in the states. The programme also funds a large PH workforce, without whom the health system in the state will be stalled. However, this workforce does not possess the benefits of permanent state employment. Introduction of a PH cadre cannot ignore the presence of this scheme, be it for its funds or for the large PH workforce it provides.

What follows below is a summary of findings for each of the four states in the study; for more details, please see the respective state chapters in the full report.

### Assam:

Assam is the largest state in NER, consisting of 35 districts. 85% of its people live in villages, about 20% belong to the tea growing communities and 12.4% belong to the Scheduled Tribes (ST). The state's own revenues and borrowings together account for only 42% of the state's revenue while the remaining consisted of GoI transfers. The state's health expenditure as proportion of total expenditure, during this period averaged at 6.6% of which NHM expenditure constituted an average of 43% from 2015-16 to 2021-22. Statistics from NFHS-3, NFHS-4, and NFHS-5 (2005-06 to 2019-20) show that there have been significant improvements in child mortality rates it had better rates than the national average. However, delivery of health care services like percentage of institution births, immunisation coverage, etc. remains below the national average especially affecting vulnerable populations like the tea communities, populations living in Char, etc. The state also has a high burden of communicable as well as non-communicable diseases in a time when the burden on communicable diseases is reducing in other states in the country. In addition to the above its typical geographical features make it prone to annual floods and its resultant fiscal and health burdens. Another problem of the area is the high levels of arsenic and fluoride in the ground water.

Majority of the PH functions rest with the Department of Health and Family Welfare which is mainly responsible for health situation monitoring and analysis, disease surveillance, budget and financial management, health promotion and education. Areas of research, health policy and decentralized planning, development of quality workforce and assuring equitable distribution of population health services is poor in the state. Currently policy and planning occur at the level of state and then only gets executed at the district level. Infact, given the contribution by NHM, policy and planning can be said to be occurring at the centre. Other public health functions like environmental and health sanitation (under State Pollution Control Board), disaster management (under State Disaster Management Authority), and law enforcement are not within the health department's purview.

The administration within the health department is undertaken by an administrative cadre called the Assam health services cadre. The eligibility rules which hold true since 1995, state that only candidates with an MBBS or an equivalent degree are eligible to be part of the cadre. Most public health administrative positions within the health department are looked over by officials of this cadre. The cadre initially undertake a combination of public health and clinical duties below the district level. With seniority, the positions involve more public health administrative responsibilities and at the state level is purely administrative. In addition to the cadre, over 6,000 staff of NHM in the state also perform PH duties in varying degrees.

Interviews pointed out to the lack of public health training both as an eligibility, as well as part of in-service training in the state's 3,450 plus staff of health services. Most programme managers in the NHM generally have a Master of Business Administration degree, while other PH staff like microbiologists, counsellors and block programme coordinators receive only respective programme-specific training, and therefore have no PH orientation. In addition, almost all interviews referred to a shortage of workforce in the state. In this context where the adequate staff is not in position, it becomes a major challenge to organise any detailed training. The state has no institutions offering Master of Public Health (MPH) courses at present, and NER has only four institutions. Medical colleges do offer Doctor of Medicine course in community medicine, but this is restricted to medical graduates only, leaving limited avenues for non-medical graduates who could be important in filling the skill gap. Although officials agree to the need for a public health cadre in the state, at the time

of the study, the state planned to introduce a separate specialist cadre for the clinical specialists in the state.

## Manipur

Manipur is a state of hills and valleys, where almost 43% of its people live in hilly areas. It has 16 districts, with 75% of its population living in villages. Manipur is situated in seismic zone V, which is the most earthquake prone zone in the country and also witnesses frequent floods. From 2017-18 to 2021-22, the transfers from the GoI (tax devolution and grant-in-aid) made up about 80% of the revenues, while its own revenues and borrowings together account for only for 20%. The state's expenditure on health decreased from 6% in 2017-18 to only 4% in 2021-22 of total state expenditure. The share of NHM also decreased from 21% to 16% in the same period. Despite its lower expenditure on health, the state performs better than the other 3 states in child mortality and as well as health delivery indicators according to NFHS 3,4, and 5. However, the tribal population in the state have much poorer health status than the general population in the state. Manipur has a higher burden of non-communicable diseases with ischaemic heart disease and stroke being the leading cause of death. The state also has one of the high prevalence of substance abuse in India, one of the causes for high prevalence of HIV/AIDS in the country. The state is highly vulnerable to various forms of natural disasters because of its distinct geo-climatic, geological, and physical features. Unlike other NE states, Manipur is in a comparatively better position with no shortfall in the number of required PHCs and CHCs. However, the state reports shortfall in terms of human resources, where only 3% of the total specialist posts are filled in the state.

The public health functions in the state are carried out by the department of health and family welfare. These functions include health situation monitoring and analysis, disease surveillance, budget and financial management, health promotion and education. Areas of research, health policy and decentralized planning, development of quality workforce and assuring equitable distribution of population health services is poor in the state. Policy, planning and budgeting occurs under the NHM, however it is done at state level with limited inputs from the districts. Other subjects of PH importance such as water treatment, sanitation and solid waste disposal are regulated by either the local government, pollution control board, or the PHED with minimum involvement of the health department.

The Manipur Health Service cadre is a single cadre comprising of both non-specialists (only MBBS degree holders) and specialists. But there, is also an informal public health wing under the additional director (PH) at the DHS. There are a total of 2,792 sanctioned posts in the cadre, of which 34 of them have a specialisation in PH/community medicine. These posts are seen as public health specialists' posts at the district and state level and there is no separate defined career path for those specialised in PH. There is also high vacancy with only about half (14 of 27) PH specialist posts at district level being filled. There are also other PH related posts in the cadre (e.g., CMOs, district nodal officers, senior MOs, etc.), which do not specify, PH qualification or training as an eligibility criterion. The state government does not sponsor any PH-related courses or training programmes for the incumbents of PH-related posts and any training received via NHM was programme specific.

The state public health officials recognized the need for a separate public health cadre alongside the current largely clinical cadre. The officials also agreed that the PH cadre in the long run also needed to include non-medical professionals within the NHM staff like the programme manager, front line workers and other technical staff like entomologists who performed non-medical public health functions. However, the "non-public health officials", felt that creation of separate PH cadre will lead to formation of silos, widening the gap between PH and clinical services as was already seen between the directorates of family welfare and health services. It was recommended instead to focus on strengthening of block public health units as envisioned in the 15$^{th}$ Finance Commission report. As with Assam, the current health services cadre needed training in public health and a clearer distinction of clinical and public health roles.

## Meghalaya

The state holds the record for being one of the wettest regions with world. It has 11 districts, with 80% of its people living in villages. The state has a large tribal population (86%) with 3 tribes, the Khasi, Garos and Jaintiyas being the most populous. The state has very poor connectivity due to its landscape and forests; only 34% of the state is connected by roads. The transfers from the GoI (tax devolution and grant-in-aid) make up about 69% of the state revenues, while its own revenues and borrowings together accounted for only 31% from 2017-18 to 2021-22. The share of

health expenditure in the total expenditure of state has hovered around a healthy 8.5% to 9% between 2017-18 to 2021-22. The share of NHM expenditure during the same time period varied from 23% to 20%. Statistics from NFHS-3, NFHS-4, and NFHS-5 show that from 2005-06 to 2019-20, there were significant improvements in infant mortality rates in Meghalaya, and the rates remained better than the national average in 2019-20. Although the state has made improvements in health care access indicators, the number of institutional births, percentage of children who are fully vaccinated is lower than the national average. The state like Assam has a large burden of infectious as well as non-infectious diseases. It also shows a severe shortage of specialists is CHCs like the other three states. In addition, a large percentage of the rural population prefers going to informal health care service providers.

As with Assam and Manipur, PH function of health situation monitoring and analysis, disease surveillance, planning and policy, budget and financial management, health promotion and education are undertaken by the department of Health and Family Welfare. Disease surveillance and health promotion are two functions that are clearly defined in the state. Although there is a directorate for research in the state, its activities are related to providing of laboratory services and production of some vaccines and PH research is largely ignored. Policy and planning are undertaken the state level with few inputs from the district level. Environment, sanitation, and hygiene, and disaster management are outside the purview of the health department and are carried out by other departments like the State Disaster Management Authority, PHED and pollution control board, etc.

Meghalaya health services splits the cadre into generalists and specialists, providing a clear delineation between administrative officials and clinical physicians. In addition to the 44 administrative officers, the state also had 608 MOs and 162 specialists in position as of July 2021. Vacancies were observed in various administrative positions of the state's 11 districts. Very few of the administrative officials, however, came with a PH background. Although, the senior officials were fully convinced about the need to strengthen the PH function in the state they not sure whether a public health cadre was the best way to achieve that. In order, to undertake training in public health, the officials would need extended period away from their official duties which may compromise their current responsibilities. A strong case was also made to include nurses by providing them PH training.

## Nagaland:

Nagaland is a mountainous state with many of its villages being situated in the hill tops. About 86% of the population belongs to ST, which are further divided into several sub-tribes having their own distinctive languages and cultures. Nagaland is also a very rural state with close to 71% of the population living in rural areas and has a total of 12 districts. The state falls under the seismic zone 5 and is at high damage risk from earthquakes. It is also prone to floods and landslides. The transfers from the GoI (tax devolution and grant-in-aid) make up about 59% of the receipts, while the own revenues and borrowings together account for only 41% for the period 2015-16 to 2021-22. The share of health expenditure in the total expenditure of state has increased from 4.8% in 2017-18 to 6.5%in 2021-22. The share of NHM in total health expenditure has decreased from 21% to 6% within the same period.

Statistics from NFHS-3, NFHS-4, and NFHS-5 show that the state consistently performed better than the national average in the infant mortality rate, which has been declining since 2005-2006. Like the other four states, the accessibility to health services remains an issue and it is visible in the low rates of institution births and vaccination coverage compared to the national level. The prevalence of non-communicable diseases have doubled in the state between 1996 and 2014, while that of communicable diseases has halved during the same time. The state is vulnerable to all kind of natural disasters such as earthquakes, flash floods, landslides, and forest fires owing to its geo-climatic, geological, and physical features. Lack of medical colleges in the state has also led to a shortfall in human resources and only 10 of specialist posts (namely, OB/GYNs, paediatricians, surgeons, and physicians) have been filled in CHCs that typically serve as first referral units.

Two important PH functions—population health monitoring and epidemiological surveillance—were well established in the state despite challenges such as difficult terrain and poor transportation facilities. As was observed in the other NE states, PH functions such as policy and decentralized planning as well as budgeting and financing were completely managed by the state level officials and the district health administration was only confined to its execution. Intersectoral collaboration between the health department and other bodies such as local governments, pollution control

board, and PHED needs to be further strengthened so that they can play an active role in enforcing laws that protect environmental health and sanitation.

The state initially (1992) had two distinct directorates, where doctors having only an MBBS degree were part of the generalist cadre and would work in the DHS and doctors who had a specialisation/post-graduate degree were part of the specialist's cadre and worked in the DMS (Directorate of Medical Services). However, issues in seniority, promotion avenues and parity in pay led to the merger of these two cadres / directorates in 2006. The experience has made officials vary of having a separate directorate for public health, however it is generally agreed upon that, rules for a PH cadre need to be carefully drafted to ensure that there is parity and similar promotional avenues when compared with other cadres in the health department. Currently the state has an acute shortage of doctors, and officials in public health positions do not have any public health training and learn on the job. This could open doors for non-medical candidates for PH positions in the state, but job responsibilities, promotional opportunities, need to be thought out carefully. Training of current incumbents in public health although preferred, is problematic given that officials may need at least 6 months leave of absence which may burden the already short-staffed system.

In conclusion, there are several factors that need to be carefully evaluated before embarking on the journey of creating a dedicated PH cadre. Foremost among them is to understand the desirability for having a cadre, followed by what cadre structure would be most effective for the state. Then comes identifying a talent pipeline along with training requirements and, last but not the least, the financial resources to support cadre formation. In Chapter 8 of our report, we have created a table that summarizes the pros and cons or enablers and disablers towards the creation of a PH cadre in the four NE states under five distinct themes of – i) desirability, ii) cadre structure, iii) talent pipeline, iv) training, and v) financial resources. This table serves as a ready reckoner for key stakeholders who would be involved in formulating a pathway for creating a PH cadre for their respective states. The decision about PH cadre is ultimately a political and economic decision that needs to consider the issue of desirability and feasibility from various perspectives. The states in NER are very unique when compared to other Indian states in terms of challenging terrains, long international borders, and low revenue generating capacity, thus leading to an

increased dependency on support from the centre. Thus, many of their governance decisions are led by the centre's directive.

We recommend that states should work towards a long-term vision of realigning their health department based on the 12 Essential Public health functions (EPHF). This would also mean that (i) the outlook shall not be limited to curative and individual care but include and prioritise preventive and population level health care, and (ii) it will adapt the 12 EPHF such that it aligns with the state's health care priorities. The existing DoHFW should be rechristened as 'Department of Public Health' since the EPHF extend beyond just PH to also encompass clinical care, medical education, research, disaster management, and health promotion to name a few. One of the conclusions from our study is that a PH cadre is not a magic bullet that can alone revamp the entire PH system. There are much larger issues to contend with, especially in terms of how the entire PH system is organised and governed. Thus, a PH cadre requires an enabling environment for it to create the desired impact. It is in this context, that we recommend a comprehensive pathway for states to undertake such that it goes beyond the creation of a dedicated PH cadre.

To traverse along the recommended pathway, we recommend that NE states should undertake the following **ten steps**:

1. Determine the EPHF that are most critical for the state and suitably adapt them as required. States could also look at combining synergistic EPHF to ensure effective implementation of the same.
2. Map how the EPHF will be executed at each level: state, district, block, and primary care level. For e.g., what aspects of data collection for disease surveillance need to be carried out at the primary health care, block, district, and state levels.
3. Mapping of EPHF should also include envisioning a newly organised workforce that can effectively implement it across all levels. Apart from clearly defining the roles and responsibilities of the various positions of this newly organised workforce, the mapping exercise should identify the infrastructure needs as well.
4. Classify the positions as i) cadre or non-cadre from a roles and responsibilities perspective, and 2) clinical, PH, or common/both from a functional perspective. Finalise the eligibility criteria/educational qualifications and

desired experience needed for these positions, along with pathways for career progression.

5. Based on the above point, arrive at a cadre structure for PH and clinical specialists along with sub-cadres for other positions that are classified as either frontline, technical, or support functions.
6. Identify the gaps between the existing workforce and the newly organised workforce in terms of i) labour and ii) training.
7. Develop a blueprint that provides solutions to how these gaps can be potentially filled, such as a specific short-term training program or setting up of a training institute in PH to build a talent pipeline.
8. To begin with, implement the blueprint at the directorate level within the first five years (short-term). The reason for going top-down is due to the criticality of the directorate level while also having lesser gaps to fill in terms of workforce.
9. Next, implement the blueprint at the district level within five to ten years (mid -term).
10. Finally, implement the blueprint at block level and below within the next 10 to 15 years (long-term).

# 1. Introduction and Background

The idea of establishing a Public Health (PH) cadre in India has long been the intent of policy planners in the country. The task force on universal health coverage, in 2011, recommended the formation of two new cadres, namely the health systems management and PH cadre (Planning Commission of India, 2011)(Planning Commission of India, 2011). This was further reiterated by the National Health Policy in 2017(Ministry of Health and Family Welfare, 2017) (Ministry of Health and Family Welfare, 2017). However, this need for a cadre has firmly taken root in the aftermath of the COVID-19 pandemic. The Ministry of Health and Family Welfare has introduced a curriculum for the Master of Public Health course in 2017-18, and an expert committee for the formation of a PH management cadre has come out with recommendations for the same in 2020-21. Although PH is a state subject, health schemes and policies in almost all states have been following the centre's directive, especially during the last two decades. This mainly started with arrival of the National Health Mission (NHM). Our review of PH expenditure in the states of Maharashtra (Raghuraman et al., 2019a) and Rajasthan (Raghuraman et al., 2019b) showed that NHM comprised an average of 20% of the states' health expenditure (2012-13 to 2017-18), and it required a complex and detailed process of budgeting and planning by each state. However, this detailed planning did not apply to the remaining 80% of the states' health expenditure. Except for health insurance schemes, only a few states have developed health schemes focusing specifically on their own health priorities. We need to examine the issue of PH cadre in this context, especially for the north-eastern states who are highly dependent on the centre for their finances.

Public health is frequently used synonymously with provision of clinical services or PH care services. Clinical services are, in fact, a smaller part of PH, which are more visible due to their very evident results. Clinical health deals with individual health care as opposed to PH that concerns itself with the health of the entire population. The World Health Organization (WHO) defines PH as, 'the art and science of preventing disease, prolonging life and promoting health through the organised efforts of society' (Acheson, 1988).

Tamil Nadu is one of the few states in India that already has a separate directorate for PH cadre established in 1922. This cadre is separate from medical services cadre

and focuses on the management of health care measures at the population level as well as at the primary care level. This separation has been credited with the states organised approach to health planning as well as cost-effectiveness of health care in the state (M. Das Gupta et al., 2009). Furthermore, the study points out that this is replicable in other states.

## 1.1 The North Eastern Region (Figure 1.1)

This study focuses on the need and challenges of having a PH cadre in the North Eastern (NE) states of India, with a specific focus on four of the seven states: Assam, Manipur, Meghalaya, and Nagaland; Arunachal Pradesh, Mizoram, Tripura, and Sikkim are the other four states that with the aforementioned states together comprise the North Eastern Region (NER) and form 7.9% of India's land mass. The NER is connected to the rest of India by means of a narrow 22 km long strip of land. Fifty-five per cent of its land is covered by forests and 98% of its borders are shared with neighbouring countries. Its mountainous terrain and high rainfall make roadways difficult and expensive to build and render far away areas inaccessible. Each of these states is diverse and has different languages and religions. The region also houses over 200 of the 635 different tribal groups in the country. The population of these states accounted for 7.9 percent of the total population in the country as per the 2011 census (Table 1.1). The region is rich in natural resources and tourism is a big sector across the NER. Tea and rice are main crops of the region.

**Table 1.1. Basic Demography of the study states of North East India**

| State | Area (in sq km) | Percent in total area | Population (Person) | Percent of total population | Density per sq km | Sex Ratio | Literacy (%) |
|---|---|---|---|---|---|---|---|
| **Assam** | 78,438 | 2.4 | 3,12,05,576 | 2.6 | 398 | 958 | 72.19 |
| **Manipur** | 22,327 | 0.7 | 25,70,390 | 0.2 | 115 | 992 | 79.21 |
| **Meghalaya** | 22,429 | 0.7 | 29,66,889 | 0.2 | 132 | 989 | 74.43 |
| **Nagaland** | 16,579 | 0.5 | 1,97,85,02 | 0.2 | 119 | 931 | 79.55 |
| **All India** | 32,87,240 | 4.3 | 1,21,01,93,422 | 3.2 | 382 | 940 | 74.04 |

Source: http://databank.nedfi.com/

Although unique and beautiful, NER's remoteness has led to poor health indicators in the states. A study on the health status of these eight states revealed that health indicators, especially the Maternal Mortality Ratio (MMR), were poor in half of these states and distribution of PH facilities was poor in all the states. Based on a

composite health index, the best performing state was Sikkim, while Meghalaya was the poorest (Goyal, 2020). In addition, in most centralised schemes like NHM, the central contribution to NER is 90%, emphasising the importance of central support to these regions. Problems due to sharing of international borders have led to unique challenges in these areas such as higher incidence of Acquired Immunodeficiency Syndrome (AIDS), drug trafficking, etc. In addition, due to the presence of numerous rivers and their tributaries, these areas are prone to frequent floods in the monsoon. In addition, they are also earthquake prone. Hence, PH challenges in NER are somewhat different and unique when compared to the rest of India.

**Figure 1.1. Physical Map of North Eastern Region**

## 1.2 The Research Questions

The central theme of the study is to investigate if the presence of a PH cadre plays an important role in responding to the diverse challenges of the NER region, especially in resource poor settings. The detailed research questions are as follows:

1. How do Assam, Meghalaya, Manipur, and Nagaland fare in terms of health indicators and health delivery systems?
2. What is the governance structure in relation to PH, and what is the mechanism of implementing PH policies in each of these four NE states? [Sub questions are related to (a) current capacity of health departments across the four states in terms of human resources/qualification/vacancies and (b) role of local bodies at various levels and locations]
3. What are the states' budgetary outlays for PH?
4. What are the state approaches to PH issues in general and PH disasters in particular (for e.g., floods)?
5. Do these NE states warrant a specialised PH cadre? What are the associated implications and challenges?

The report is organised in eight parts. The first three chapters give an introduction to our study along with the methodology, followed by a brief description of the NER. The next four chapters are each dedicated to findings from Assam, Manipur, Meghalaya, and Nagaland, respectively. The eighth and final chapter provides conclusions and a roadmap for states to follow while setting up a PH cadre.

# 2. Study Methodology and Challenges

We used a combination of research methods, which included expert consultations, literature and policy reviews, personal interviews of stakeholders, and primary and secondary data analyses. We examine the need for a PH cadre using the following five different lenses before making inferences and arriving at conclusions:

1. Health landscape of the state
2. Governance structure, including health service cadre
3. Essential Public Health Functions (EPHF)
4. Health and PH finances
5. Perspectives of PH experts and government health officials

## 2.1. Analytical lenses

### 2.1.1 Health landscape of the state

We analysed the secondary data of state level health indicators (especially in relation to maternal and child health (MCH), Communicable Diseases (CDs), and Non-Communicable Diseases (NCDs). This included mapping the overall trends in health indicators. Data was traced from the third and fifth rounds of National Health & Family Survey (NFHS), NFHS-3 and NFHS-5, which were conducted between 2005-06 and 2019-20, respectively. A literature review was simultaneously undertaken to understand the key PH issues of the state and the underlying causes for the health indicators to be what they are, that is, the influence of local factors such as climate, community, occupation, and region. We also looked at the current status of health facilities and specialists' posts (especially obstetricians-gynaecologists [OB/GYNs], paediatricians, surgeons, and physicians) in terms of the states' current requirements and shortfall. For this, we analysed the secondary data obtained from the Rural Health Statistics (2019). We referred to the 75th National Sample Survey (NSS) report on health services to understand the percentage of population that utilizes government health facilities and prefers going to a formal health care provider for medical advice.

### 2.1.2. Governance structure including health service cadre

We mapped the organogram of the health department at all levels—with a specific focus on the governance structure in relation to PH. We reviewed the state's health service rules and consulted concerned state officials to understand the existing

health services cadre of the state, which is responsible for both clinical health and PH. The cadre structure, eligibility criteria, number of posts, various grades/levels, composition, and breakup along with job responsibilities were studied in detail. Based on that, we identified ten key PH-related positions (across state/district/block levels) for a further deep dive with respect to the academic qualifications and trainings completed by the incumbents of these posts. We also planned to analyse the workforce distribution of the cadre (clinical health versus PH) and mode of employment (permanent versus contractual).

### 2.1.3. Essential Public Health Functions

The Institute of Medicine's 1988 report (Walker, 1989) was one of the first efforts to clarify what PH entails on a practical level. It emphasised on three core PH functions: assessment, policy development, and assurance. Over the next decade, several researchers and PH agencies proposed different ways of framing these three core PH functions. The key global health actors involved in this initiative were the various WHO regional offices, Pan American Health Organization, the World Bank (WB), and the Centers for Disease Control and Prevention (CDC), the United States. In 1994, the Public Health Functions Steering Committee[1] led by the CDC developed the 10 Essential Public Health Services (EPHS) as a means of communicating the key PH services needed to protect and promote the health of the public. A revised version of the EPHS intended to bring the 1994 framework in line with current and future PH practices was released in September 2020 (Centers for Disease Control and Prevention, 2020). Meanwhile, on the other side of the Atlantic Ocean, the collapse of the then Soviet Union and the resulting fragmentation of public services in the New Independent States led the WHO Regional Office for Europe to develop its own Essential Public Health Functions (EPHF) (Bettcher et al., 1998) as a way to assist these newly formed states in establishing a minimum portfolio of PH services.

When comparing the CDC's EPHS with WHO's EPHF, a significant overlap is seen between the two frameworks. However, while the main focus of the EPHS is on building and improving capacity of existing PH services, the EPHF focuses more on

[1] The Public Health Functions Steering Committee included the American Public Health Association, the Association of Schools of Public Health, Association of State and Territorial Health Officials, the Environmental Council of States, the National Association of County and City Health Officials, the National Association of State Alcohol and Drug Abuse Directors, the National Association of State Mental Health Program Directors, the Public Health Foundation, U.S. Public Health Service agencies: the Agency for Health Care Policy and Research, the Centers for Disease Control and Prevention, the Food and Drug Administration, the Health Resources and Services Administration, the Indian Health Services, the National Institutes of Health, the Office of the Assistant Secretary for Health, and the Substance Abuse and Mental Health Services Administration. Source: Public Health in America Statement, 1994/5.

minimum services required and gap identification for developing countries. Furthermore, WHO cites the CDC's EPHS as a successful framework for assessing and improving PH services in the United States and notes its emerging use as an approach for lower- and middle-income countries to build their PH capacity. Both these frameworks are very synergistic and share a common aim of establishing a practical inventory of competencies and capacities in PH and have been developed for use in the policy arena. These two frameworks help in understanding gaps in the performance of the basic functions that an effective PH system must fulfil. Since the development of these two frameworks at the turn of the last century, several other international, national, and subnational agencies have also adopted a functional, system-wide approach to defining and assessing PH.

In 2004, WB adapted to India an EPHF framework that was originally developed by the CDC and the Pan American Health Organization for Latin American countries(M. Das Gupta et al., 2004). This EPHF framework was specifically designed to identify the most pressing gaps in India's PH services. Known as the Governance Knowledge Sharing Program, WB implemented this EPHF framework at the national, state, and district levels of India, and more specifically in Karnataka. Twelve EPHF were finalised based on inputs and feedback received from various PH experts of India. World Bank (WB) also developed survey instruments(World Bank, n.d.) to help understand and assess the PH system's performance against the above 12 EPHFs. Separate survey instruments were developed and administered at the national, state and district levels.

Based on a review of these 12 EPHF by WB, the associated survey instruments and juxtaposing it with the requirements of our study, we developed an EPHF-based mapping tool to understand the functioning of the state's PH system. The EPHF based mapping tool includes the following functions:

1) Health situation monitoring and analysis
2) Epidemiological surveillance/disease prevention and control
3) Research and development on PH
4) Policy and planning
5) Budgeting and financial management
6) Health promotion and education
7) Reducing the impact of emergencies and disasters on health
8) Regulation and enforcement of PH

9) Assuring a competent PH workforce
10) Ensuring quality of population-based health services
11) Environmental health and sanitation

In each state, the EPHF based mapping tool is administered to six district level health officials such as the Chief Medical Officer (CMO), district nodal officers of various PH programmes, district surveillance officer, and the district programme manager. The responses gathered from this mapping tool give us an understanding of how a specific EPHF is being discharged, who is responsible for it, their qualifications, and the manner in which it is being discharged. This helps us in identifying the lacunae in the existing PH system.

### 2.1.4 Health and Public Health Finances

We also studied the finances of the four NE states (Assam, Manipur, Meghalaya, and Nagaland) to provide an overview of the economic activity by looking into the Gross State Domestic Product (GSDP), its growth and its share across various sectors. This served as a context to better understand the health expenditures.

Analysis of state budget documents of the four NE states (Assam, Manipur, Meghalaya, and Nagaland) on expenditure and allocations on public health department/health department for 5 years (2016-17 to 2020-21) was carried ou. Total Health Expenditure (THE), Public Health Expenditure (PHE), Total Expenditure (TE) and National Health Mission (NHM) were calculated. Total Health Expenditure included all expenditures under the Major Heads 2210 (Medical and Public Health), 2211- Family welfare and Capital expenditure 4210 (Medical and Public Health).Public Health Expenditure included all the expenditure under Sub Major Head-06 (Public Health) within Major Head 2210 (Medical and Public Health) and expenditures related to public health such as training pertaining to Maternal and public health, school health scheme, public health programs like TB, National Health Mission , cancer, Malaria, cholera, dysentery, leprosy, filaria, goitre, AIDS and STD Immunization, health and family welfare training centres and capital outlay related to public health programs (within 4210). Public health expenditure also included public water supply expenditures (state level program expenditures under Major Head 2215) and portion of (10%) under disaster management (Major Head 2245) Total Expenditure of the state from the consolidated fund. This includes revenue expenditure, capital expenditure and loans and advances.

National Health Mission includes all expenditures relating to the scheme including National Aayush Mission. This is either accounted under Sub Major Head-06 (Public Health) within Major Head 2210 or Sub Major Head -03 (Rural Health Services). Expenditures incurred by the North Eastern Council (NEC) were also examined but since only 2.5% of their expenditure is being spent on health/PH-related activities for the entire NER, it has not been included in our final analysis. The personnel related cost is an important aspect of any health expenditure analysis. However, NE states have very low own-source revenues and greater dependency on GoI transfers coupled with high deficits; thus, it is prudent not to consider personnel cost in the analysis. Schemes in CSS have a 90% contribution from GoI, and tax share is a significant revenue for the state to fund its expenditure; therefore, this makes the personnel cost analysis insignificant.

### 2.1.5 Perspectives of Public Health Experts and Government Officials

Semi-structured interviews with government officials and consultations with PH experts (from non-governmental organisations, academia, and retired officers) were conducted to gather their perspectives on the need for a dedicated PH cadre, its implications and challenges, cadre structure, eligibility and qualifications, pre-conditions for having a successful cadre, and other foreseeable advantages and limitations. Government officials included key PH personnel in the state, district, and block level of health departments, and it specifically included those who are part of the current health service cadre under the Directorate of Health Service (DHS).

## 2.2 Study Challenges

The study commenced in February 2021 but within the first couple of months, it faced unprecedented challenges due to the devastating second wave of the COVID-19 pandemic that hit the country between April and June 2021. We had to cancel our planned field visits during this time period. In parallel, we also had to disengage the services of a few local research assistants (based in the NER) who we had specifically hired to support our field work. This led to a significant wastage of programme funds. We subsequently took up field work from September 2021 onwards and while we were able to achieve many of our planned objectives, a majority of the field team members unfortunately contracted COVID-19 towards the end of this period. This again impacted a few of the planned project deliverables during that time-

period. Apart from working through the second and third waves of the pandemic, a few other challenges that we faced have been described below.

### 2.2.1. Non-availability of data related to the workforce

Officials across all four states were unable to provide us with a description of roles and responsibilities for different posts, including their own posts. The workforce data shared seldom had information on PH leadership/management staff and instead was largely confined to availability/non-availability of medical specialists, nurses, and others who work in health facilities. Data on the current health service cadre was also not available at any directorate (except in Nagaland to some extent) as the health service cadre was posted across various directorates health service, family welfare, and medical institutions.

### 2.2.2. Limited success in administering the EPHF based mapping tool

Mapping of the EPHF was met with limited success as it was difficult to get information from most officials beyond their own programmatic area. Even senior officials in the district office such as the CMO) or the District Medical and Health Officers (DMHOs) were unable to take stock and provide their insights on the overall functioning of the PH system.

### 2.2.3. Limited availability of Health officials

Bulk of our field work and consultations with government officials were between the second and third wave of the pandemic; hence, most health officials were extremely burdened with COVID-19 related duties. Many officials were not available in their offices and those who were present too had very limited time for us.

These challenges also point towards the fact that health governance systems are not necessarily organised around clearly defined health functions and job roles—this is something we discuss in detail later. We discuss the macroeconomic context of the four NE states in detail in the following chapter, which is critical in NER because of specific provisions that the region has vis-à-vis the fund transfers from the GoI.

# 3. Setting the Context: Macro-economy of the North Eastern Region states

It is very important to understand the finances of the NE states, especially the four study-states, in the context of their geography, have high costs and revenue disabilities and are compensated by the Finance Commission grants through tax devolution. The low revenue generating capacity accompanied by the higher cost for provision of services in the hilly terrain makes these states highly dependent on the GoI. Successive finance commissions have tried to address these through their recommendations using general purpose transfers (tax devolution) and special purpose transfers (grant-in-aid). Transfers from Government of India (GoI) in the form of grant-in-aid for implementation of developmental schemes has been decided at a 90:10 ratio for special category states, which includes all eight states in NER along with Himachal Pradesh and Uttarakhand. Thus, the grants for Centrally Sponsored Schemes (CSS) receive support of GoI to an extent of 90% while the rest 10% is to be provided by the state. A good understanding of the state finances with these provisions and dependency of the states on GoI transfers (both tax devolution and grant-in-aid) is very essential.

## 3.1 Gross State Domestic Product (GSDP)

A recent article which looked into the growth of Gross State Domestic Product (GSDP) in the NE states indicated that these states together accounted for only 2.8% of Gross Domestic Product (GDP) of the country in 2019-20, of which Assam had two-third share (Das & Vaibhav, 2021)(). In 1993-94, all of them (except Mizoram) contributed to 3.7% of national GDP; similarly, the share of Assam fell from 2.8 % to 1.6 % of the national GDP during the same period. The per-capita income (PCI), which was higher than the all-India average, in all NE states in 1980 has seen a steady decline in Assam, Manipur, Meghalaya, and Nagaland; however, there has been a steady increase in the PCI of Tripura and Mizoram. The growth rates for GSDP (at constant prices) during the last five years does not show a clear pattern (Table 3.1).

**Table 3.1. Gross State Domestic Product (constant prices) (INR in Crore) and its growth over years (by percent)**

| STATE | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|---|
| **Gross Domestic State Product (INR in Crores)** | | | | | | |
| **Assam** | 1,55,599 | 1,80,674 | 1,87,123 | 2,06,807 | 2,08,921 | 2,12,778 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Manipur** | 15,025 | 15,978 | 16,343 | 18,155 | 18582 | 19,904 |
| **Meghalaya** | 19,134 | 18,758 | 19,513 | 20,923 | 22,091 | 23,313 |
| **Nagaland** | 14,297 | 14,448 | 15,251 | 15,908 | 16,411 | 17,654 |
| **Growth Rates of the Gross Domestic State Products (in percent)** | | | | | | |
| **Assam** | | 16.1% | 3.6% | 10.5% | 1.0% | 1.8% |
| **Manipur** | | 6.3% | 2.3% | 11.1% | 2.4% | 7.1% |
| **Meghalaya** | | -2.0% | 4.0% | 7.2% | 5.6% | 5.5% |
| **Nagaland** | | 1.1% | 5.6% | 4.3% | 3.2% | 7.6% |

Source: http://databank.nedfi.com/

The services sector accounted for the highest share of the GSDP across the four states. Nagaland had the highest PCI, (at constant prices) followed by Meghalaya, Assam, and Manipur (Table 3.2). The growth of PCI during 2015–20 was the highest in Assam, followed by Manipur, Nagaland, and Meghalaya.

**Table 3.2. Sectoral share of Gross State Domestic Product (2019-20) and the per-capita income (PCI)**

| State | Agriculture (%) | Industry (%) | Services (%) | PCI (Rs) 2019-20 | PCI Growth 2015-20 |
|---|---|---|---|---|---|
| **Assam** | 16 | 34 | 50 | 60660 | 6.3% |
| **Manipur** | 28 | 11 | 61 | 53930 | 4.2% |
| **Meghalaya** | 22 | 20 | 58 | 62435 | 2.3% |
| **Nagaland** | 33 | 12 | 56 | 71247 | 3.4% |

Source: http://databank.nedfi.com/

While the share of agriculture in GSDP is declining, which is similar to the national trend, the share of manufacturing has not gone up unlike the national level. Government expenditure forms a significant proportion of GSDP. The share of government expenditure in the GSDP reduced from 57% in 1993-94 to about 46% in 2017-18 but rose to 50% in 2019-20, which is much higher compared to the all-India average of about 18% for this period.

## 3.2 Financial Support mechanism for the NE Region

In order to have a clear developmental focus, the Development of North Eastern Region (DoNER) department was converted into a full-fledged ministry at GoI in 2004. The Ministry of DoNER coordinates with various ministries and departments at GoI concerned with the implementation of programmes for the region, including the Non-Lapsable Central Pool of Resources and North -East Special Infrastructure Development Schemes. At Shillong, the NEC, which was set up in 1971 as a regional planning body for the region, comes under the administrative control of DoNER (Ministry of Development of North Eastern Region, n.d.).

Since 1996, GoI announced a policy decision of allocating 10% of the Plan budgets to NER. As a nodal ministry, DoNER has the responsibility of ensuring the 10% gross budgetary support under the Non-Lapsable Central Pool of Resources. The allocation and expenditure from 2014-15 to 2021-22in the last seven years is presented in the Table 3.3. The expenditures against the revised estimates have been good hovering above 90%

**Table 3.3. Cumulative Allocation and Expenditure by different ministries for North Eastern Region (INR in Crores)**

| Year | Budget Estimates | Revised Estimates(RE) | Expenditure | % Expenditure of RE |
|---|---|---|---|---|
| **2014-15** | 36,108 | 27,359 | 24,819 | 91% |
| **2015-16** | 29,088 | 29,669 | 28,674 | 97% |
| **2016-17** | 29,125 | 32,180 | 29,368 | 91% |
| **2017-18** | 43,245 | 40,972 | 39,753 | 97% |
| **2018-19** | 47,995 | 47,088 | 46,055 | 98% |
| **2019-20** | 59,370 | 53,374 | 48,534 | 91% |
| **2020-21** | 60,112 | 51,271 | 32,478* | |
| **2021-22** | 68,020 | | | |

Source: DoNER Annual Report, 2020-2021.

*This is up to December 2020.

Though the NEC largely focuses on creating an enabling infrastructure that would complement the investments of the states, the size of their investments is thinly spread across sectors. The release of funds under various sectoral works in the last six years are presented in Table 3.4. The releases towards 'Medical and Health' are the lowest at 2.55% of the total and are mainly concentrated towards the

establishment of health infrastructure. Hence, the major expenditure on health from the centre comes through the NHM.

**Table 3. 4.Sectoral releases by North Eastern Council over years (INR in Crore)**

| Sector Name | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | Total | (%) |
|---|---|---|---|---|---|---|---|---|
| **Agriculture And Allied** | 106 | 192 | 189 | 324 | 195 | 143 | 1148 | 19.87 |
| **Irrigation Flood Control** | 46 | 38 | 87 | 46 | 51 | 23 | 290 | 5.02 |
| **Industries** | 34 | 52 | 33 | 43 | 43 | 61 | 266 | 4.60 |
| **Transport And Communication** | 341 | 344 | 540 | 188 | 454 | 140 | 2007 | 34.72 |
| **Medical And Health** | **17** | **26** | **30** | **17** | **13** | **43** | **147** | **2.55** |
| **Human Resource Development** | 82 | 150 | 161 | 96 | 140 | 62 | 691 | 11.96 |
| **Science And Technology** | 26 | 25 | 28 | 35 | 14 | 38 | 166 | 2.88 |
| **Information And Public Relations** | 12 | 20 | 30 | 18 | 14 | 18 | 113 | 1.95 |
| **Evaluation And Monitoring** | 1 | 4 | 3 | 4 | 6 | 2 | 20 | 0.34 |
| **NLCPR** | 0 | 0 | 0 | 0 | 197 | 145 | 342 | 5.91 |
| **Power Development** | 70 | 62 | 99 | 65 | 55 | 16 | 367 | 6.35 |
| **Tourism** | 25 | 37 | 36 | 40 | 42 | 42 | 222 | 3.84 |
| **Grand Total** | **762** | **951** | **1234** | **876** | **1224** | **733** | **5780** | 100 |

*Source: http://shillong.nic.in/oasis/sectorwise_yrwise_plan.aspx*

## 3.3.The National Health Mission (NHM) and its significance in public health

A flagship scheme of GoI, the NHM was created to improve the overall health status of the country by providing universal access to equitable, affordable, and quality health care services that are accountable and responsive to people's needs (MoHFW, n.d.) It was first launched in 2005 as National Rural Health Mission, with a focus only on the rural areas of the country. However, in 2013, it was relaunched as NHM encompassing both the rural mission and the National Urban Health Mission. As it

is a CSS, NHM is largely funded by the central government. With its special status, NER had a sharing pattern of 90:10 (GoI:State). Even after the recommendations of the 14th Finance Commission came into effect in April 2015, the share has remained to 90:10 (GoI: State) for NER though this changed to 60:40 for most other Empowered Action Group states.

Like in all other states, the routing of the funds from the central government has changed from 2015. Before 2014-15, the funds were routed directly to the designated state level implementing agency, State Health Society. However, post-2014-15 the central funds are being routed through the state treasury to the State Health Society, as is the case for the state government's share.

By virtue of how it s envisioned, NHM undertakes expenditure on most all areas of the PH system. All national programmes except AIDS come under the NHM. Although its major area of focus remains Reproductive, Maternal, Child, Newborn and Adolescent Health and all CD and NCD programmes also come under its ambit. In addition to expenditure on programme management, NHM also spends on service delivery in terms of human resources, community services, and facility services; it also spends on procurement of drugs and machinery, research, training, infrastructure, quality control and Information Education Communication/Behavior Change Communication (IEC/BCC) materials. National Health Mission is supposed to aid the states in strengthening their PH system. In Assam, Meghalaya, Manipur, and Nagaland, NHM expenditures average to more than 50% of their PH expenditure, showing how important this scheme is to these states.

National Health Mission has its own financial and planning structure within state governance structures At the state level, the mission functions under the overall guidance of the State Health Mission. The State Health Society carries out the functions under the mission where every district has a District Health Society. At the state level, the NHM is headed by an Indian Administrative Service (IAS) officer as the mission director at the secretariat level., Its functions extend to all directorates within the health department. Each state must submit a detailed programme implementation plan for every year. This plan includes the Financial Management Report that separates expenses under almost 2000 line items. Each state must give in detail descriptions of the previous year's expenses as well as coming year's expected budget. Funds under NHM lapse yearly if utilization certificates are not produced

for the said expenses. Hence, states spend a good amount of time in preparing programme implementation plans.

Hence, the NHM plays an important part in delivering PH functions in all the states and has significant influence on how health care is delivered in the state. It brings in efficiency in the system by placing emphasis on planning and budgeting. The programme also funds a large PH workforce, without whom the health system in the state will be stalled. Introduction of a PH cadre cannot ignore the presence of this scheme, be it for its funds or for the large PH workforce it provides.

With this broad perspective and using the analytical lenses described earlier, the following four chapters look at issue of PH cadre in the states of Assam, Manipur, Meghalaya, and Nagaland.

# 4.Assam

Assam is the largest state in NER both by population and area. It has 35 districts, which are grouped into five divisions: Upper Assam, Central Assam, Lower Assam, North Assam, and Barak Valley. The river Brahmaputra flows through 24 districts. Almost 85% of its people live in rural areas(*Census 2011*) (Census 2011). Gender parity is in favour of women in some areas such as literacy; 88% women as against 84% men were literate in 2019-20(IIPS & ICF, 2021b)). About 20% of Assam's population belong to the tea growing communities and 12.4% belong to the Scheduled Tribes (ST). Seven districts—Hailakandi, Barpeta, Goalpara, Darrang, Dhubri, Baksa, and Udalguri—in Assam have been identified as aspirational districts[2] by NITI Aayog.

**Figure 4.1. Physical Map of Assam**

[2] The most underdeveloped districts in India are identified by the NITI Aayog and termed as Aspirational districts. Under NITI Aayog's direction, various ministries at the district level work to improve indicators in the areas of Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development, and Infrastructure through inter-sectoral collaboration; 112 such districts have been identified under the Aspirational Districts Programme, 2018.


## 4.1.Financial Status

The finances of the state indicate that despite its own revenues growing at an annual average of 14% per year, the annual growth rate has declined since 2019-20 (Table 4.1). Similarly, the growth rate for the share of taxes has also declined since 2018-19, while its annual average growth for the period 2015-16 to 2021-22 remained at 5%. Grant-in-aid has grown at an annual average growth of 25% owing to higher transfers during the years 2019-20 and 2020-21, the COVID-19 pandemic years. Borrowings were the highest among the revenue components of the state and have grown at an annual average growth rate of 29%.

**Table 4. 1 Components of Revenue (INR in Crore) and its growth over the years (in percent) in Assam**

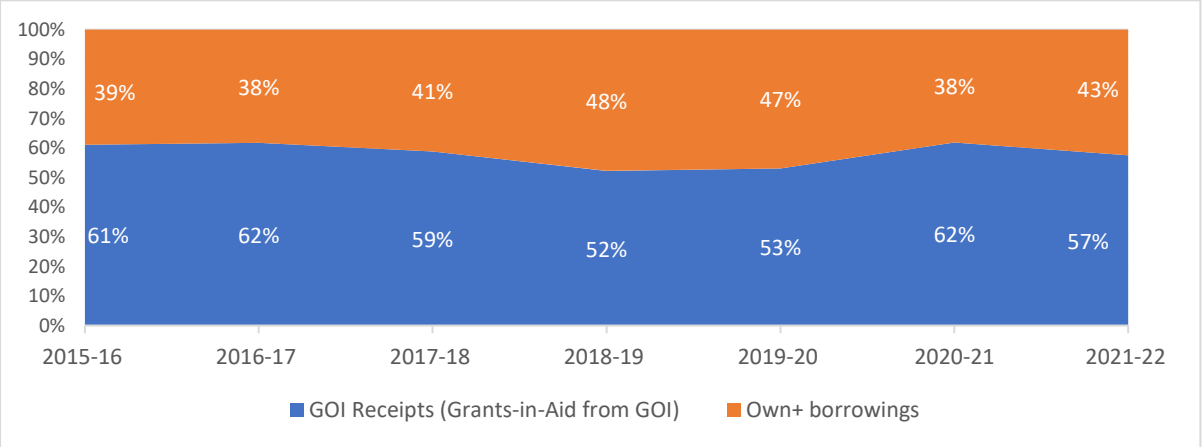
| Revenue | 2015-16 AC | 2016-17 AC | 2017-18 AC | 2018-19 AC | 2019-20 AC | 2020-21RE | 2021-22 BE |
|---|---|---|---|---|---|---|---|
| **Own Revenue** | 12,847 | 16,433 | 17,288 | 24,146 | 22,068 | 23,409 | 27,276 |
| **Share of Taxes** | 16,785 | 20,189 | 22,302 | 25,216 | 21,721 | 26,776 | 20,819 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Grant in Aid from Government of India (GoI)** | 12,825 | 12,598 | 14,542 | 14,117 | 20,706 | 39,599 | 40,885 |
| **Non debt capital receipts** | 510 | 19 | 4 | 3 | 1141 | 300 | 13 |
| **Borrowings** | 5,498 | 3,902 | 8,447 | 11,755 | 14,250 | 17,231 | 18,326 |
| **Total Receipts** | 48,465 | 53,141 | 62,583 | 75,237 | 79,886 | 1,07,315 | 1,07,319 |
| | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **Average** |
| **Own Revenue** | 28% | 5% | 40% | -9% | 6% | 17% | 14% |
| **Share of Taxes** | 20% | 10% | 13% | -14% | 23% | -22% | 5% |
| **Grant in Aid from GoI** | -2% | 15% | -3% | 47% | 91% | 3% | 25% |
| **Non-debt capital receipts** | -96% | -79% | -25% | 37933% | -74% | -96% | 6261% |
| **Borrowings** | -29% | 116% | 39% | 21% | 21% | 6% | 29% |
| **Total Receipts** | 10% | 18% | 20% | 6% | 34% | 0% | 15% |

Source: Analysis of Assam state budget documents.
Note: AC is Actuals, RE is Revised Estimate, and BE is Budgeted Estimate.

The transfers from the GoI (tax devolution and grant-in-aid) make up about 58% of the revenues, while the state's own revenues and borrowings together account for 42% (Figure 4.2). The total liabilities estimated for the year 2021-22 stood at 26% of GSDP or 112% of the revenue receipts.

**Figure 4. 2. Share of Government of India transfers and Own revenue + borrowings (percent)**




## 4.2. Health status:

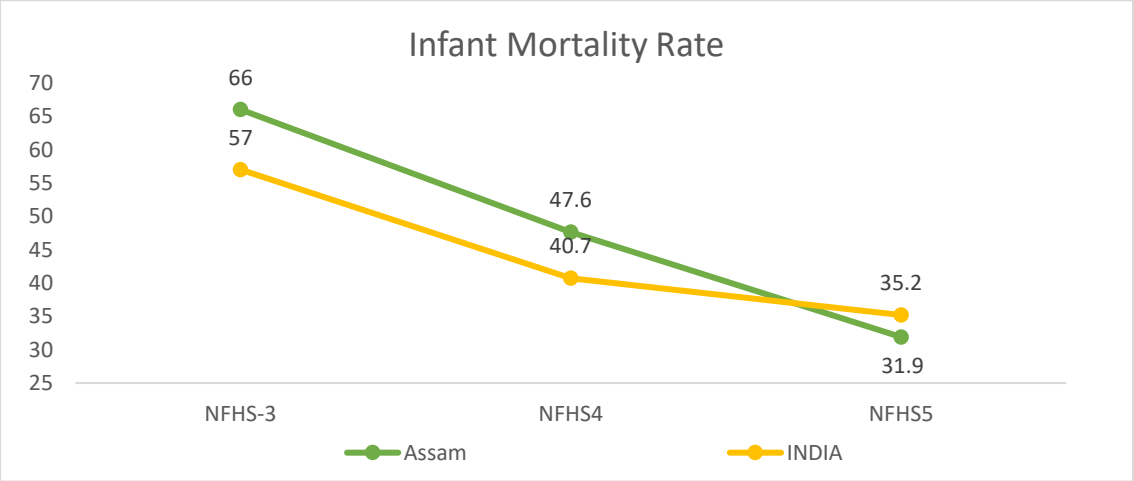
The areas of major concern in Assam have been MCH, CDs, and NCDs.

### 4.2.1. Maternal and Child Health

The state has seen improvements in the number of institutional deliveries from just 22% in 2005-06 to 84% in 2019-20, with the percentage of mothers having least four antenatal visits increasing at a slower pace from 23.5% to 50% during the same time. Statistics from NFHS-3, NFHS-4, and NFHS-5 also show that from 2005-06 till 2019-20, there have been significant improvements in child mortality rates in Assam. In 2019-20, it had better rates than the national average (Figure 4.3). However, despite improvement in child mortality rates, Assam had the highest MMR in the country at 215 deaths per 100,000 births in 2016-18 (Ministry of Health and Family Welfare, 2021).

Although health indicators are improving, some communities are still lagging behind, which is pulling down the averages in the state. A study of causes of maternal deaths in four districts of Assam between 2016 and 2018 showed a significant association of maternal deaths in those belonging to the tea community (p=0.000)(Rane et al., 2019). The tea community comprises roughly 20% of Assam's population, and studies have shown that women and children in these communities have poorer health indicators and access to health services as compared to the rest of the state (Medhi et al., 2006; Rajbangshi & Nambiar, 2020; Rane et al., 2019).

**Figure 4.3. Infant mortality rate per 1000 live births from 2005-06 to 2019-20**

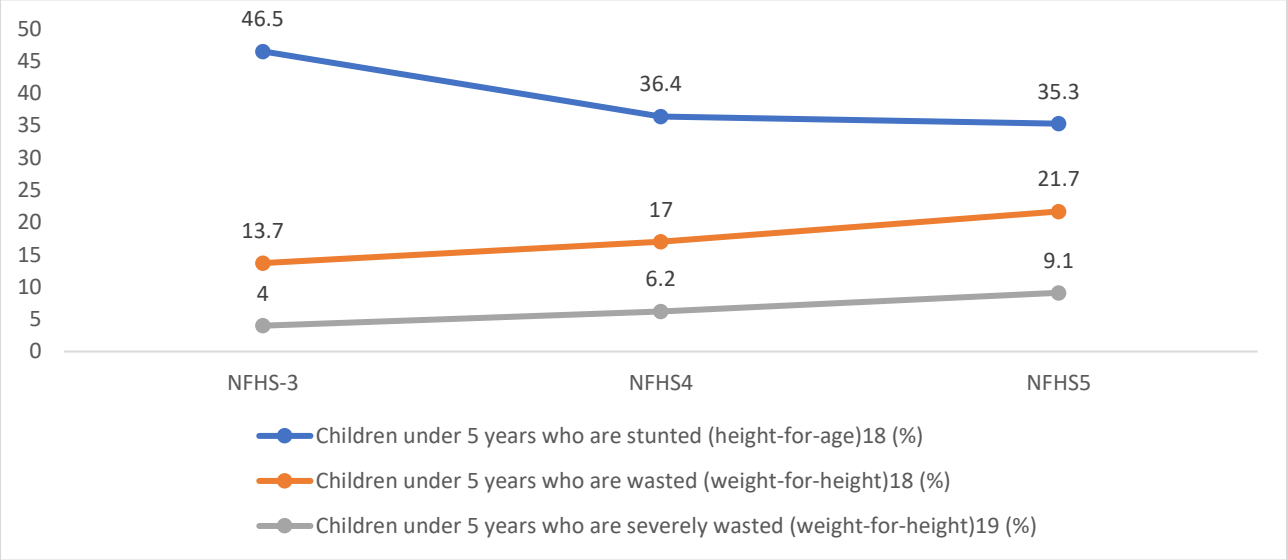



Source: National Family Healthy Surveys (3, 4, and 5) Assam and India fact sheets

Similarly, higher prevalence of underweight among children was seen in a cross-sectional study for Muslim children residing in the Char (riverine areas) of Barpeta district (Begum, 2019). Hence, it is obvious that certain communities and locations are at a greater disadvantage when it comes to health indicators. Though the percentage of children who are wasted or who have low weight for height has increased in the past 15 years in the state (Figure 4.4), the percentage of children

under 5 years of age who are stunted has decreased, and the number of children under 2 years of age who are fully immunised has improved over the years [3].

**Figure 4. 4.Nutritional Status of children under 5 years of age in 2005-06, 2015-16, and 2019-20 in Assam**




Source: National Family Health Surveys (3, 4, and 5) Assam State fact sheets

### 4.2.2. Communicable and Non-communicable diseases:

The report on the disease burden in Indian states showed that in 2016, Assam's Epidemiological Transition Level (ETL)[4] was 0.61, that is the burden of deaths due to non-communicable diseases and injuries were almost equal to deaths due to infectious causes (Indian Council for Medical Research(ICMR) et al., 2017). This is suggestive of large burden of both CDs and NCDs. According to a report, 'Non-communicable diseases in Assam account for 51.2% of the total disease burden in the state and the major risk factors for NCDs are Malnutrition (17.4%), High Blood Pressure ( 7.6%) and Tobacco (5.7%)' ("Non-Communicable Diseases Claim 5.2 Million Lives in India," 2019).

In addition to NCDs, Assam was flagged in the study for having one of the highest number of Disability-Adjusted Life Years (DALYs), i.e., healthy years lost due to disability caused mainly by diarrhoeal disease, lower respiratory tract infections,

[3] The percentage of children aged 12-23 months who were fully vaccinated improved from 31.4% in 2005-06 (NFHS-3) to 47.1% in 2015-16(NFHS-4) and 66.4% in 2019-20 (NFHS-5).

[4] Epidemiological transition level (ETL) based on the ratio of the number of DALYs in a population due to communicable, maternal, neonatal, and nutritional diseases to the number of DALYs due to non-communicable diseases and injuries together. A decreasing ratio indicates advancing epidemiological transition with an increasing relative burden from non-communicable diseases as compared with communicable, maternal, neonatal, and nutritional diseases.

and tuberculosis (TB). The tropical monsoon rainfall climate of Assam is a conducive environment for vector-borne diseases. Large paddy fields, water bodies, and pig farms make it ecologically favourable for the spread of diseases. Among vector-borne diseases, malaria and Japanese encephalitis are the major PH problems in Assam(Ahmed, 2020; Dev et al., 2015).

In addition, the National Mental Health Survey, 2017 found that 27.35% of the survey population had substance use disorders (the highest was contributed by tobacco followed by alcohol), harmful use and dependence on drugs, and use of other illicit drugs.

### 4.2.3. Health care service delivery in Assam:

The delivery of health care services in Assam are through a system of state-run Sub-Centres (SC), Primary Health Centres (PHC), Community Health Centres (CHCs), District Hospitals (DH), and medical colleges. Table 4.5 shows that there exists a shortfall[5] in the number of PHCs and CHCs. This shortfall becomes more pronounced when we look at the human resources, where there is a shortage of 81% (only 136 of the 708 positions were filled in 2019) when it comes to specialists' posts (namely, OB/GYNs, paediatricians, surgeons, and physicians) in CHCs, which typically serve as first referral units. These shortages have implications for the health care provisioning as 80% of Assam's population lives in villages, and 52% of those people utilize government health facilities (NSS, 2018)(NSS 75th round, 2018-19). The report also showed that 14% of Assam's people preferred going to an informal health care provider for medical advice emphasising the use of traditional medicine by the local people.

**Figure 4.5. Number of health facilities in Assam, 2019-20**

| Type of facility | Number of facilities Present | Required | Shortfall |
|---|---|---|---|
| **Subcentres** | 4643* | 6374* | 27.2% |
| **Primary Care Centres** | 946* | 1040* | 9% |
| **Community health Centres** | 177* | 260* | 32% |
| **Sub divisional/district Hospital** | 14** | NA | NA |

[5] The Indian Public Health Standards (IPHS) guidelines prescribes one Primary Health Centre for every 30,000 population and 1 in 20,000 for hilly terrains.

| | | | |
|---|---|---|---|
| **District hospitals** | 25** | NA | NA |
| **Medical colleges** | 6** | NA | NA |

Source : *Rural Health Statistics, 2019; **NA is Not Available
https://hfw.assam.gov.in/portlets/health-care-institutions#btab as on 9 May, 2020

### 4.2.4. Other public health issues

Assam is the second highest arsenic-affected habitation state after West Bengal in the country. There is a high prevalence of arsenic contamination in groundwater, affecting 12 out of 34 districts in the state(Simran, 2021). In addition, 23 districts also report presence of fluoride contamination of ground water, resulting in skeletal deformities in children (Zahan, 2017). Moreover, floods have been occurring in Assam almost every year. As per the Assam State Disaster Management Authority, more than 56 lakh people living in 30 of the 33 districts were affected by the floods in 2020 (Agarwala, 2020). According to the Joint Needs Assessment Report of 2017, which assessed 32 villages affected by floods, 69% of the villages had no access to safe and clean drinking water, and 84% of villages were found to be practising open defecation (Inter Agency Group, 2017). Although Assam's measures for sanitation and hygiene have improved over the years, some of the poorest communities still practice open air defecation.

In conclusion, while Assam faces the burden of poor MCH indicators coupled with high prevalence of CDs and NCDs, the state's health care system faces a shortage of specialised medical professionals. In addition, the state is also facing health concerns due to its geographical features. This obviously points towards the need for strengthening population health measures, which can play an important role in prevention of diseases and therefore also easing the burden on the health care system.

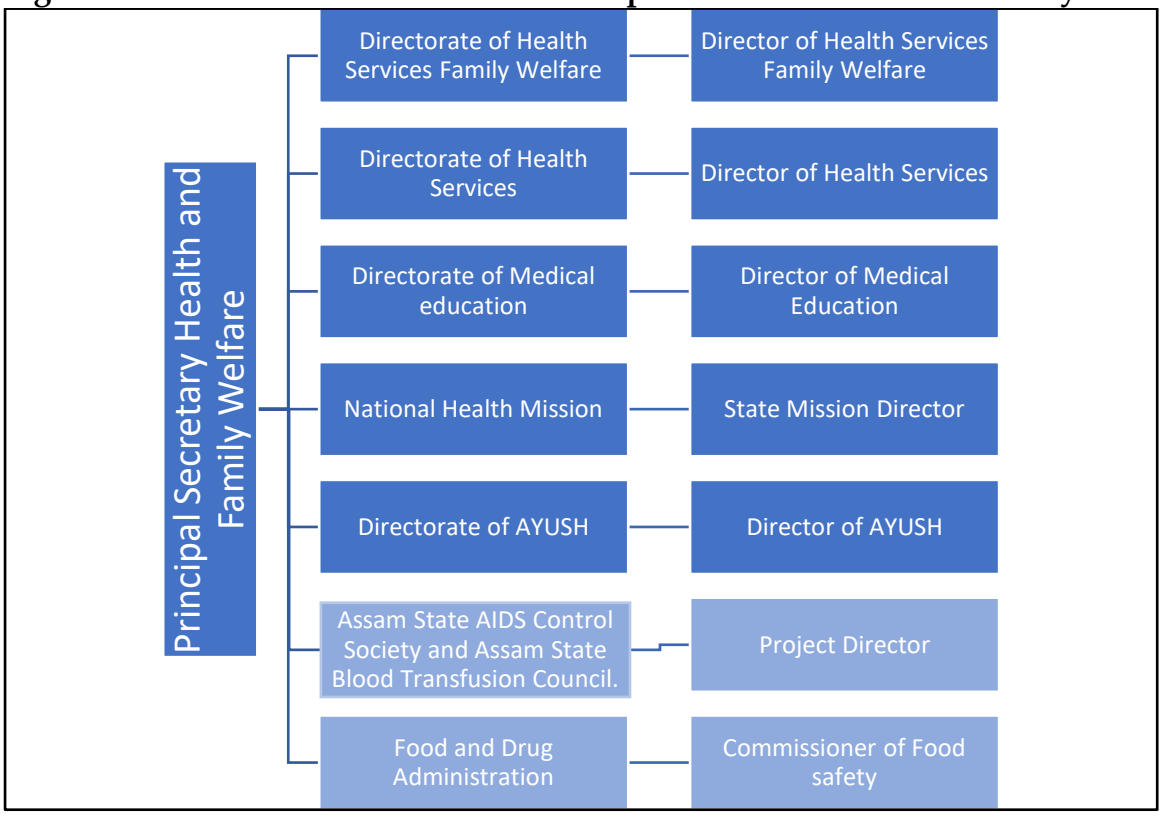
## 4.3. Structure of Department of Health and Family Welfare

As with most state governments, a majority of the PH functions rest with the Department of Health and Family Welfare (DoHFW), which is responsible for health situation monitoring and analysis, disease surveillance, research, planning and policy, budget and financial management, health promotion and education, assurance of a competent PH workforce, and surety of quality population-based services. However, certain other functions like environmental and health sanitation (under State Pollution Control Board), disaster management (under State Disaster

Management Authority), and law enforcement are not within the department's purview.

The Department of Health and Family Welfare is under the health minister, and it is headed by a principal secretary at the secretariat level and directors of individual sub-departments at the directorate level (Figure 4.6). The directorates of Health Services, Family Welfare and Medical Education have some PH role to play. The Directorate of Health Services (DHS) has authority over all the PH facilities as well as health programmes in the state. The Directorate of Health Services & Family Welfare oversees programmes and workforce who deal with reproductive and child health (e.g., immunisation and family planning). The Directorate of Medical Education manages teaching institutions and hospitals under them. Other organisations that also come under the DoHFW include the Directorate of AYUSH, Assam State AIDS Control Society, Food and Drug Administration and the Assam State Blood Transfusion Council.

**Figure 4.6 Directorates under Assam Department of Health and Family Welfare**



Although not a separate directorate, NHM functions as an entity separate from the above three directorates and has a mission director who is more senior that the directors and comes from the IAS. It contributes significantly to all three directorates in terms of workforce, planning, and funding, thus leading to a kind of duality in terms of control. Most contractual workforce (e.g., state consultant, epidemiologist, entomologist) as well as ground staff (e.g., Accredited Social Health Activist [ASHA]) are provided under the NHM, while the programme nodal officers (e.g., malaria officer, TB officer, and permanent staff like MO and auxiliary nurse midwives are under the DHS. As NHM is CSS with its own complicated budgeting and planning mechanisms, it stands out separately from the rest while still being deeply imbibed into the state's health architecture.

Role of non-health departments

Although health care provision and treatment are the roles of the health department, population health is seldom confined only to these roles. For example, maintenance of sanitation and hygiene, testing of water for levels of fluoride, provision for disaster management, etc. are critical areas for population health, and the health department does not have any direct control over these. Public Health Engineering Department (PHED) is the department responsible for undertaking measures for preventing fluorosis and arsenic poisoning in the state. Similarly, disaster management comes under the Assam State Disaster Management Authority, which during floods or other emergencies co-ordinates with the health department for prevention and treatment of epidemics due to contaminated water and vector borne diseases. The Department of Woman and Child Development co-ordinates with the DoHFW for immunisations of pre-school children at the anganwadi centres. The health department mainly undertakes the treatments required for severely malnourished children within nutrition. In addition, pollution control boards, various urban and local bodies also contribute to maintenance of population health in the state, prevention of pollution, sanitation and hygiene, food safety, etc.

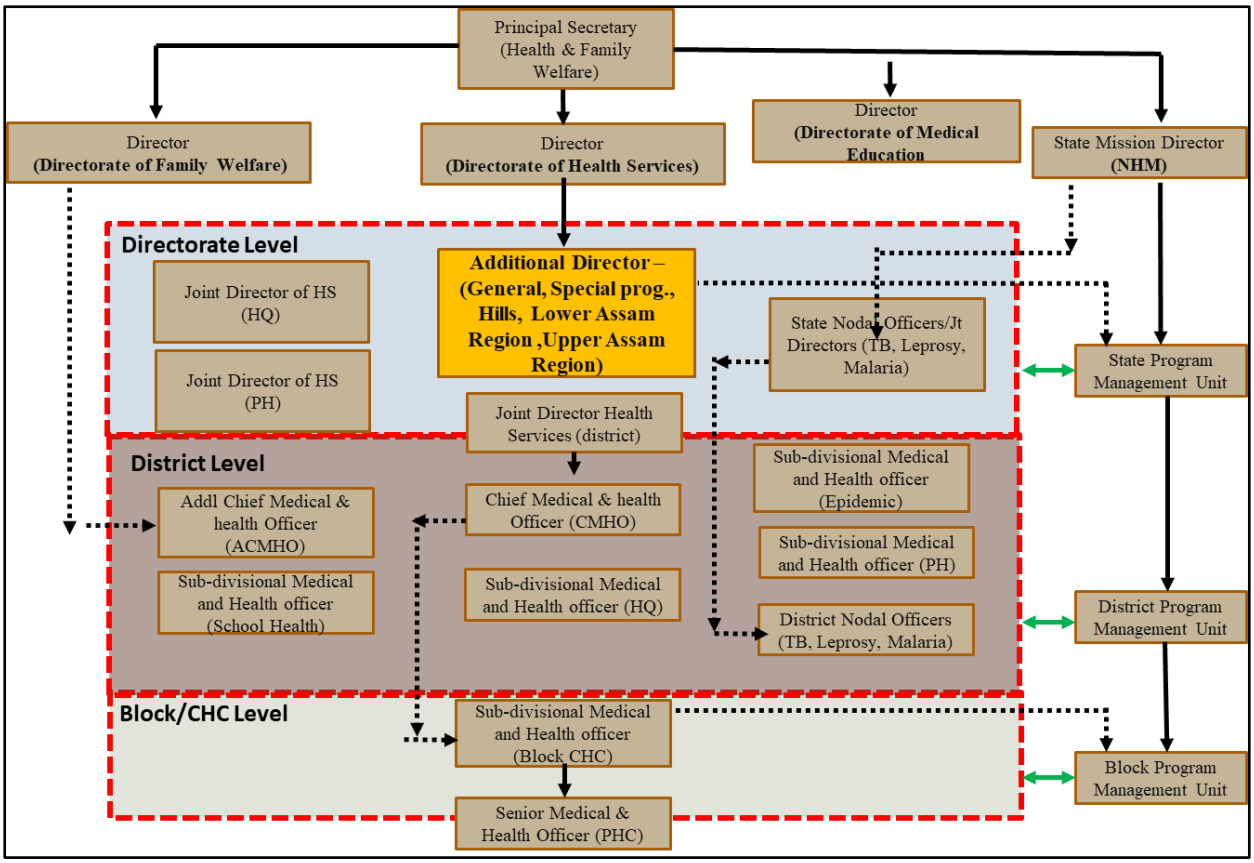
## 4.4. Assam Health Services Cadre

The Assam Health Services Rules, 1995 describes the positions, eligibility, and other rules that govern officers of the Assam Health Services, who are recruited by the Assam Public Service Commission. Currently, both clinical specialists and general physicians are part of this health services cadre and are mainly part of the DHS, Directorate of Health Services & Family Welfare, and Directorate of Medical

Education. According to these rules, the minimum eligibility for direct recruitment to health services cadre is a Bachelor of in Medicine and Bachelor of Surgery (MBBS) or an equivalent degree. The candidate starts as a Medical and Health Officer (MHO) at the Primary Health Centre and is promoted to become a senior medical and health officer after five years of service and then to the Sub Divisional Medical and Health Officer (SDMHO) at the district level. Figure 4.7 shows the structure of health services cadre in the state.

On par with the SDMHO post are the posts of district immunization officer, superintendent grade II, epidemiologist/assistant to director of health services. After two years, the candidate is eligible for promotion to the post of the Joint Director (JD) or equivalent post at the district level—this is the highest post at the district level, under whom are the chief medical and health officer who is charge of the DHS and the additional chief medical and health officer who oversees the Directorate of Health Services & Family Welfare. These posts are mainly administrative but may involve some clinical duties from time to time. Equivalent posts at this grade include of superintendent of TB hospital, Superintendent mental hospital as well as district leprosy officer, zonal malarial officer, etc. At the state level, JDs are posted for TB, malaria, nursing, public health, etc. There are state nodal officers for various health programmes and have more than one charge. Above the JDs are the additional directors of health services who all come under the director of health services.

**Figure 4.7. Administrative structure of Department of Health, Assam**




As mentioned earlier, NHM has its own separate set-up at the state, district, and the block, headed by the mission director at the state level. The state's health services rules put the number of recruits in the health services cadre at 3450 in 1995. However, since then the number of districts in the state has increased from 18 to 33, the number of personnel should be more than 5,000. However, we were unable to obtain the total number of personnel under the health services cadre in the state. In general, training on administrative or PH issues did not emerge as a priority in the state. Our interviews with officers posted at various levels of the department pointed out towards the lack of training in administrative and PH duties of incumbents[6]. One joint director pointed out, 'Training in PH should be given as a choice, depending on whether an MBBS graduate wants to go for administrative line or clinical line. There are other trainings as well that can be helpful; for instance, hospital management course could help in the present system, where many doctors have to look into both administration and clinical part under their duties'. Currently the only trainings available were through NHM and were specific to the programme where the nodal officer was posted, e.g., TB or leprosy. Senior officials considered

[6] We interviewed the principal secretary, director of health services, state and district programme officers, state and district statistical officers, district malaria officer, and SDMHOs. The post of the JD for PH was vacant as the previous official had retired.

cadre positions as a cushy pre-retirement positions and did not feel the need to upgrade their skills, as in clear form this statement by one of the senior officials: "The JD, additional directors, and chief medical and health officers should go for orientation programmes, but letters of exemption, giving reasoning of their age barrier or health issues are common".

Documents stipulating the roles and responsibilities of each post were also unavailable. It was also seen that programme officers had little knowledge of outside of the programme/post that they were assigned to, especially in matters of budgeting and financing. Officials relied on NHM programme managers in matters of programme planning and budgeting given the complex NHM processes. Of the various positions interviewed in the state, only the NHM state programme manager had a degree in community medicine. The technical staff as well as programme managers in NHM in Assam are also not trained in PH.

The health department in Assam has recognised the need for a PH cadre and is looking into various means on how this can be achieved. The state has decided that they would separate specialist doctors from this cadre. Currently, specialists like ophthalmologists, ear, nose, and throat doctors, etc. hold administrative posts like that of SDMHO, chief medical and health officer, etc. In a state that faces severe shortage of specialists, having a separate cadre for specialists should help in bridging the service gap and opening up PH cadre positions for those with training in PH.

The state has also decided to extend benefits of state employees (except pension) to NHM employees who have completed 10 years of service. The NHM provides technical expertise as well as grass roots workforce in the state where 50 percent of its budget is spent on personnel. Assam had passed a Public Health Act in 2010 but the state never formed the rules and hence it was never put in use.

### 4.5. Essential Public Health Functions

Table 4.2 shows how Assam's health department fares in executing various PH responsibilities. These grades are based on five EPHF interviews that were conducted at the district level with a District Programme Manager (DPM,) SDMHO (PH), SDMHO (epidemic), district MO, and a District Surveillance Officer (DSO).

Like most states, the main responsibility of the district health office lies in execution of the various central and state schemes (mainly NHM).

**Table 4.2. Essential Public Health Functions Assam**

| | **Function** | Status | Remarks |
|---|---|---|---|
| EPHF 1 | Health situation monitoring and analysis | | Currently all data are in silos, with some like infectious diseases, maternal and child health getting most importance. |
| EPHF 2 | Epidemiological surveillance | | Well-established system under the Integrated Disease Surveillance Programme(IDSP) strengthened due to COVID-19 |
| EPHF 3 | Research | | Little to no research done |
| EPHF 4 | Planning and Policy | | Minimal involvement of district. Undertaken by the National Health Mission (NHM). |
| EPHF 5 | Budgeting and Financial Management | | Minimal involvement of district. Undertaken by NHM at state level. brought structure to financial processes. |
| EPHF 6 | Health Promotion and Education | | Every programme has a separate Information, Education, Communication (IEC) cell |
| EPHF 7 | Reducing the Impact of Outbreaks, Emergencies and Disasters on Health | | Separate disaster management authority at the district level under District Commissioner who coordinates from NHM, IDSP |
| EPHF 8 | Regulation and Enforcement in Public Health | | Does not come under the purview of health department except to some extent food safety. |
| EPHF 9 | Evaluation and Promotion of Equitable Access to Necessary Health Services | | Service delivery is paid importance mainly by improving standards of all health facilities to Indian Public Health Standards (IPHS) standards, limited or no research on improving access |

| | Function | Status | Remarks |
|---|---|---|---|
| EPHF 10 | Assuring a Competent Public Health Workforce | | Limited PH training which is mainly programme specific. Under NHM all are contractual postings with no specific career pathway. |
| EPHF 11 | Ensuring the Quality of Population-Based Health Services | | Presence of IPHS standards for institutes |
| EPHF 12 | Environmental Health and Sanitation | | Not responsibility of health department but of the pollution control board in the state. |

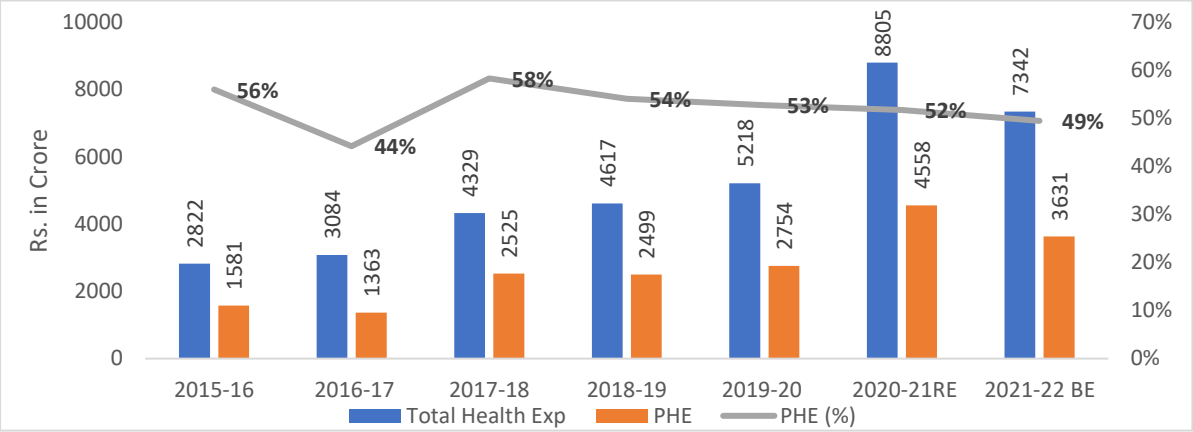
Note: Green colour denotes that the function is fairly defined and operational in the state. Orange colour denotes that the function is not well defined but operational to some extent in the state. Red denotes that this function is carried out poorly or not the responsibility of the health department.

It was seen that epidemiological surveillance and health promotion were two responsibilities that were well established in the state at the district level. However, policy, planning, budgeting, and financing were completely taken over by the state officials. Although under NHM, district and block officials can voice their requirements in budget as well as facilities, the final decisions are taken by the state which seldom considers the districts' opinions. The department does not look into environmental health and sanitation as these come under the purview of the PHED and the pollution control board. Disaster management in the state is coordinated by the district commissioner and the health department is an important part of the team. Research is another area ignored by the department.

## 4.6. Analysis of Public Health Expenditure

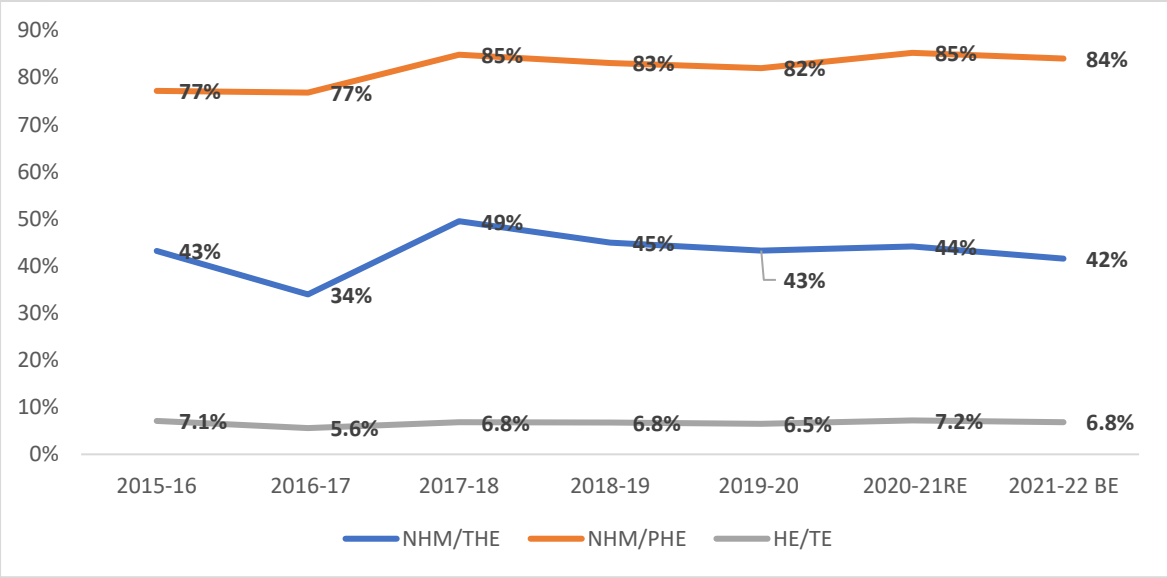
Assam state's total health expenditures have grown at an Annual Average Growth Rate (AAGR) of 20% over the period 2015-16 to 2021-22, while the PH expenditure of the state has grown at AAGR of 21% and that of the NHM expenditures at 24% for the same period. The share of PH expenditure in Total Health Expenditure (THE) averaged at 52% for the period 2015-16 to 2021-22. The share of PH expenditure as a proportion of THE has shown a decline from 58% in 2017-18 to 49% in 2021-22 (Figures 4.8 and 4.9).

**Figure 4. 8. Total Health Expenditure and Public Health Expenditure over years (INR in crore)**




The share of NHM expenditures in THE increased to 49% in 2017-18 decreased to 42% in 2021-22 (Figure 4.9). The share of NHM in the PH expenditure has averaged at 83% over the period 2015-16 to 2021-22. The share of health expenditure in the total expenditure of state has recorded a steady decline since 2015-16 from 7.1% to 6.8% in 2021-22 with exception in 2020-21 at 7.2%, which was a COVID-19 pandemic year that necessitated a higher PH expenditure.

**Figure 4. 9.Share of NHM expenditure and Health expenditure**




## 4.7. Health Cadre: Insights and Takeaways

Following were the key takeaways on the current health administrative structure.

### *Lack of Public health training*

Currently, the state health services rules of 1995 does not mandate any PH training; therefore, very few of the state's 3,450 plus staff of health services have any PH training or PH degree. Specialists (non-PH) and generalists occupy most administrative positions in the cadre. The over 6,000 staff of NHM in the state also perform PH duties of varying degrees. Most programme managers in the NHM generally have a Master of Business Administration degree, while other PH staff like microbiologists, counsellors and block programme coordinators receive only respective programme-specific training, and therefore have no PH orientation. The PH training or health administration emerged as one of the most important needs in the interviews.

### *Shortfall of skilled human resource*

The state reported a shortage of more than 1000 doctors and 3000 nurses in August 2019(Assam Department of Health and Family Welfare, 2021). Almost all interviews referred to a shortage of workforce in the state. In a context where the adequate staff is not in position, it becomes a major challenge to organise any detailed training. The state seems to have decided to attract specialists into the government sector by proposing the creation of a separate specialist cadre but no such steps for the creation of a separate PH cadre were visible in the state.

### *Lack of educational infrastructure for education and training*

The state has no institutions offering Master of Public Health (MPH) courses at present, and NER has only four institutions. Medical colleges do offer Doctor of Medicine course in community medicine, but this is restricted to medical graduates only, leaving limited avenues for non-medical graduates who could be important in filling the skill gap. Hence, opening up avenues for non-medical professionals as well as nurses for MPH degree could help in creating a potential work force. The state has a Bachelor of Science in Community Medicine programme that trains community health officers, who have paramedical training and work under the MO at the SC level. They supervise the auxiliary nurse midwives and ASHA workers under them and have various programme management and health promotion roles. However, not much information is available on the vacancies or how this is functioning is available. Interviews with key personnel and current incumbents of the health services posts showed that creation of a separate PH cadre would be beneficial. It would be crucial to understand the role and potential of these

supervisors before proposing a PH cadre and also promoting MPH courses in the state.

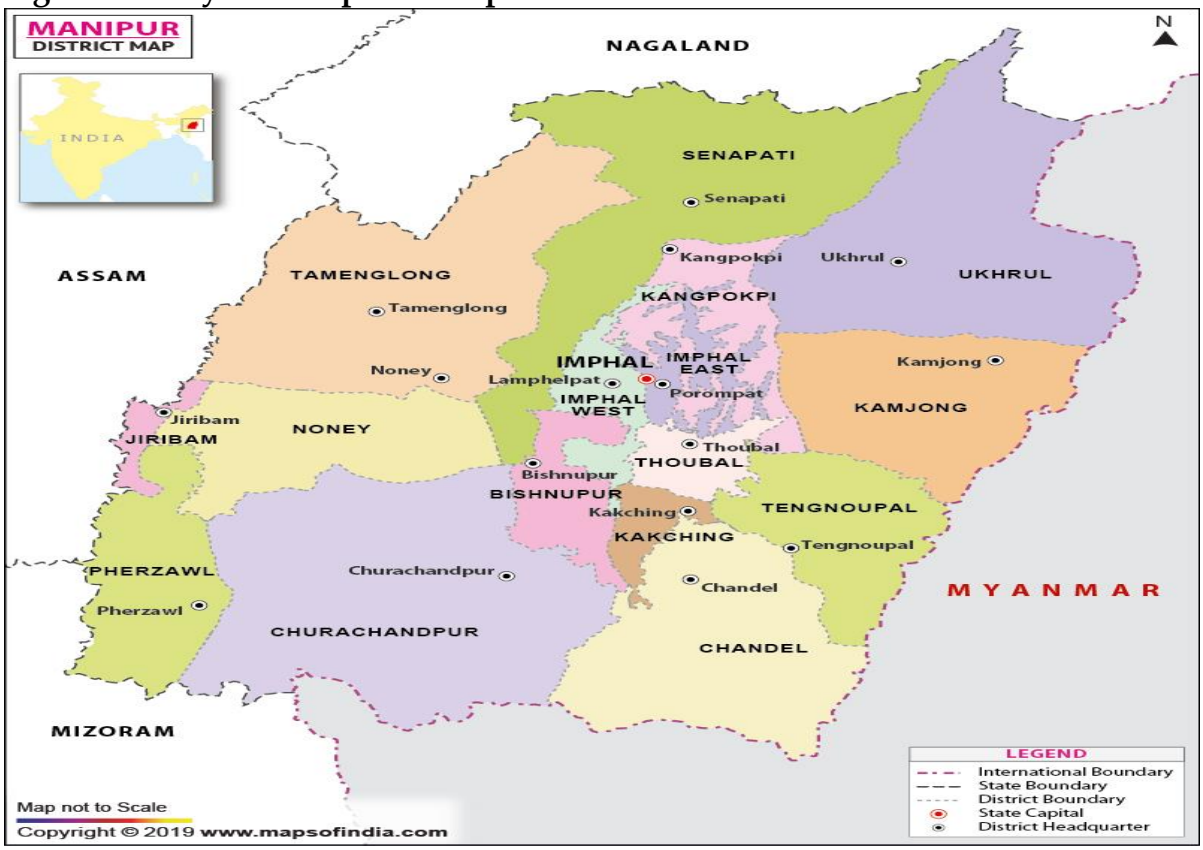
## 5. Manipur

Manipur is a strategically located state in the NER. It is surrounded by Nagaland in the north, Assam in the west, Mizoram in the south, and it shares a long international border with Myanmar in the east and the south. It is a state of hills and valleys with more than 90% of the state being hilly. However,

only 42.8% of the total population lives in the hilly areas, while the remaining 57.2% live in the valleys. It has 16 districts and one of them, Chandel, has been identified as an aspirational district by NITI Aayog.

Almost 71% of the population lives in rural areas; the percentage of Hindu population (41.39%) is almost the same as that of Christian population (41.29%). Nearly 41% of the total population belongs to the ST (Census 2011). The sex ratio of the total population (females per 1,000 males) was 1,066 in 2019-20 with 95.2% of men and 87.6% percent of women being literate (NFHS-5). Manipur is situated in seismic zone V, which is the most earthquake prone zone in the country and also witnesses frequent floods.

**Figure 5.1. Physical Map of Manipur**




## 5.1. Financial Status

The state's own revenues have healthily grown at an AAGR of 24% (Table 5.1). However, the share of taxes from GoI has declined in their growth in 2018-19 and 2019-20, while their annual average growth for the period 2015-16 to 2021-22 remained at 8%. Grant-in-aid has grown at an AAGR of 28% owing to higher transfers during the years 2019-20 and 2020-21, which are pandemic

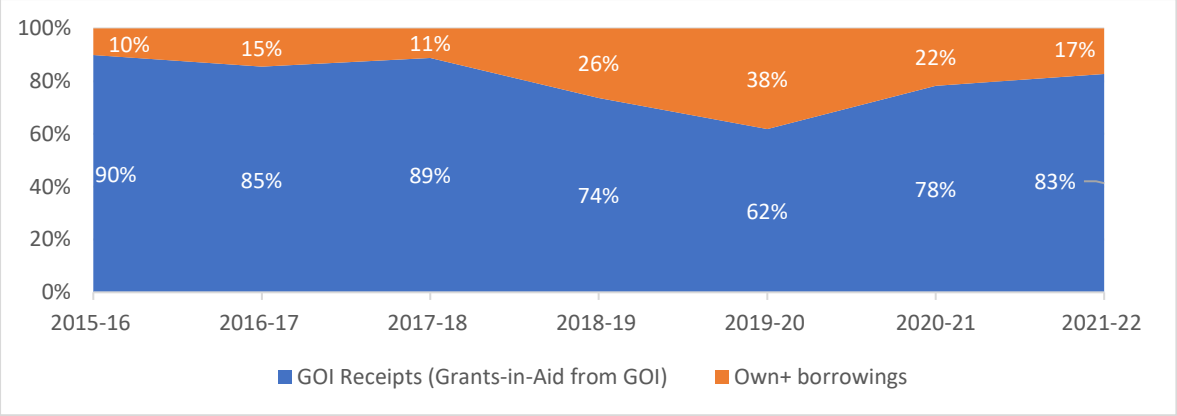
years. Borrowings declined during the COVID-19 period owing to higher transfers from GoI to the state.

**Table 5. 1.Components of Revenue (INR In Crores) and their growth over years (2015 to 2022, in percent) in Manipur**

| Revenue (in INR Crores) | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|---|---|
| **Own Revenue** | 700 | 751 | 965 | 1,212 | 1,336 | 1,571 | 2,442 |
| **Share of Taxes** | 3,142 | 3,757 | 4,154 | 4,699 | 4,048 | 3,949 | 4,765 |
| **Grant-in-aid from GoI** | 4,438 | 4,621 | 5,238 | 4,651 | 5,301 | 11,998 | 14,312 |
| **Non debt capital receipts** | 1 | 1 | 8 | 1 | 1 | 4 | 4 |
| **Borrowings** | 926 | 1,551 | 1,296 | 3,780 | 6,590 | 4,849 | 4,500 |
| **Total Receipts** | 9,207 | 10,682 | 11,662 | 14,342 | 17,275 | 22,370 | 26,024 |
| **Year on year growth rate** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **Average** |
| **Own Revenue** | 7% | 28% | 26% | 10% | 18% | 55% | 24% |
| **Share of Taxes** | 20% | 11% | 13% | -14% | -2% | 21% | 8% |
| **Grant in Aid from GoI** | 4% | 13% | -11% | 14% | 126% | 19% | 28% |
| **Non debt capital receipts** | 13% | 597% | -93% | 36% | 374% | 0% | 154% |
| **Borrowings** | 68% | -16% | 192% | 74% | -26% | -7% | 47% |
| **Total Receipts** | 16% | 9% | 23% | 20% | 29% | 16% | 19% |

The transfers from the GoI (tax devolution and grant-in-aid) make up about 80% of the revenues, while the own revenues and borrowings together account for 20% (Figure 5.2). The total liabilities estimated for the year 2021-22 stood at 32% of GSDP or 63% of the revenue receipts.

**Figure 5. 2. Share of Government of India transfers and Own revenue + borrowings (percent), Manipur (2015-15 to 2021-22)**



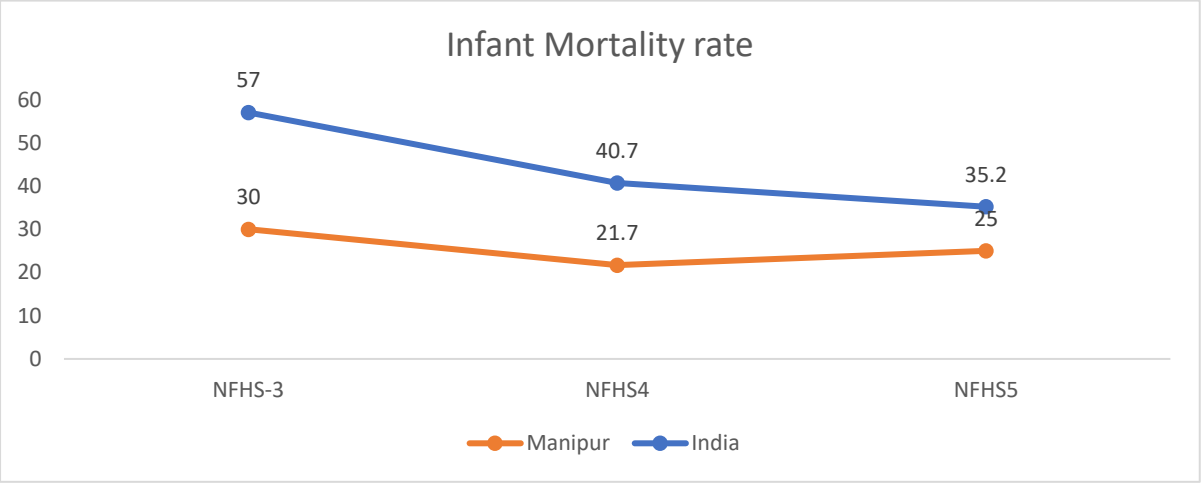

## 5.2. Health status:

The major PH related issues in Manipur are related to MCH, CDs, and NCDs.

### 5.2.1. Maternal and Child Health

Statistics from NFHS-3, NFHS-4, and NFHS-5 show that though there had been a drop in both infant and under 5 mortality rates between 2005-06 and 2015-16, the infant mortality rate has slightly creeped up in 2019-20 (Figure 5.3). However, these rates remain lower than the national average in 2019-20. The Indian Council for Medical Research's (ICMR) 2016 report on disease burden in states showed that the largest cause of deaths (37%) in children aged 0 to 14 years in the state were due to diarrhoea and lower respiratory tract infections, followed by deaths due to neonatal disorders (36%).

**Figure 5. 3.Infant mortality rate per 1,000 live births from 2005-06 to 2019-20, Manipur and India**

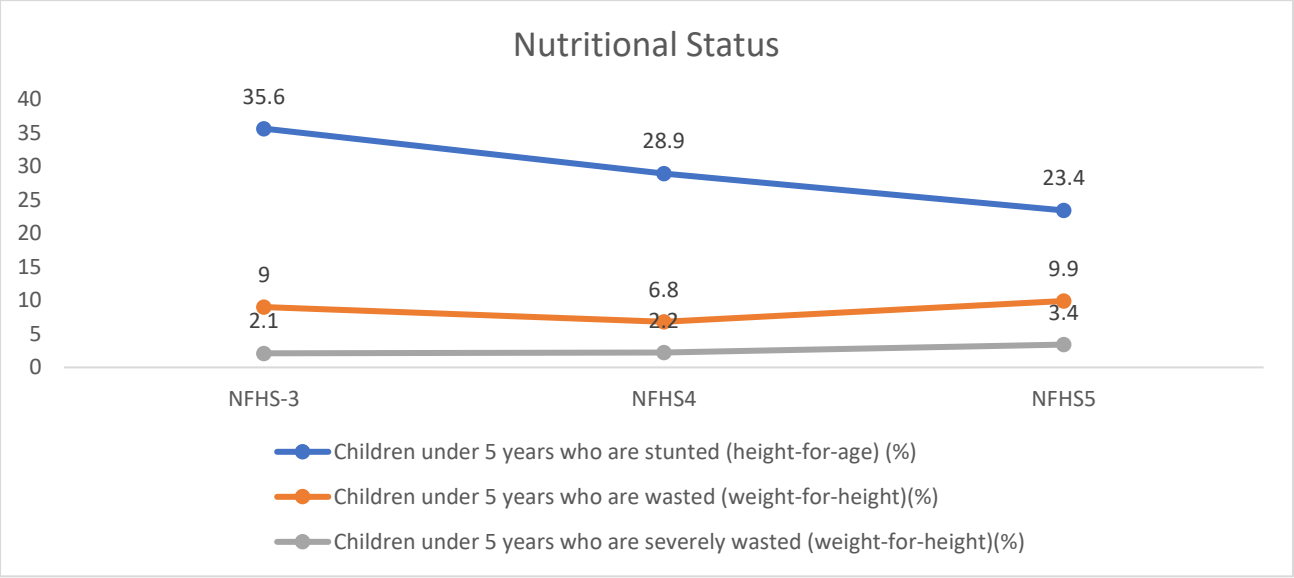



Source: National Family Health Survey state fact sheets.

However, Manipur has performed better in other key PH indicators. The state has seen significant improvements in the number of institutional deliveries from just 45.9% in 2005-06 to 79.9% in 2019-20, with the percentage of mothers having at least 4 antenatal visits also steadily increasing from 54.1% to 79.4% during the same time period.

The percentage of fully vaccinated children between aged 12-23 months also increased from 46.8%in 2005-06 to 68.8% in 2019-20. In terms of nutritional status of children under 5 years of age (Figure 5.4), the surveyed result shows a non-uniform pattern. The proportion of children under 5 years of age who are stunted (height-for-age) declined from around 35.6% in 2005-06 to 28.9% and 23.4% in 2015-16 and 2019-20, respectively. On the other hand, the proportion of children under 5 years of age who are wasted (weight-for-height) decline to 6.8% in 2015-16 from 9% in 2005-06, but again slightly increased to 9.9% in 2019-20.

**Figure 5.4. Nutritional Status of children under 5 years of age in 2005-06, 2015-16, and 2019-20, Manipur**




Source: National Family Health Survey state fact sheets

Though the state fares reasonably well in key PH outcomes when compared with other states in India, there is a significant difference observed between the hilly districts and the valley districts within the state. There exist huge inequalities in accessing Maternal Health Care (MHC) services, and it is observed that the percentage of institutional deliveries in the valley districts

(for example, 96 % in Imphal West) is significantly higher than the hilly districts (for example, 45 % in Ukhrul). The same holds good for the vaccination coverage of children as well.

The inequality in accessing MHC services was also more pronounced among the hilly districts, and the mother's educational level, economic status and exposure to mass media were the main determinants that were driving this inequality (Mishra et al., 2021). The poorer MCH status among the tribal population of Manipur is also highlighted in several studies conducted in the hilly districts of the state. A study on the Rongmeis tribal community of Tamenglong district (Maheo & Devi, 2017) asserts that around 90%of -married women surveyed delivered their babies at home, and a majority of them did so without the support of a trained health care personnel. Lack of availability, accessibility, and affordability of MHC services are the main reasons for low institutional deliveries coupled with customs and beliefs in traditional practices. Similarly, another study in Senapati district (Kipgen, 2018) examining the MCH status revealed low antenatal care (62%), institutional delivery (12%), and post-natal care (13%) among the Thadou-Kuki tribal population. The prevalence rate of underweight (27%), stunting (45%), and wasting (12%) in children under 5 years of age from the Meitei community (which is considered a socio-economically advanced community of Manipur) were significantly higher than the state level estimates (Loukrakpam et al., 2020), which shows that poverty may not be the root cause of these concerns.

### 5.2.2. Communicable and non-communicable diseases

The report on the disease burden in Indian states showed that Manipur's ETL dropped from 1.37 in 1990 to 0.42 in 2016 and is the lowest among all the NE States, showing a higher proportion of deaths due to NCDs and injuries. The death rates due to stroke and diabetes in Manipur are significantly higher than the national average. While diarrhoea and lower respiratory infections were the leading cause of DALYs in the 1990's, by 2016 they had been replaced by NCDs such as ischemic heart disease and stroke.

Yadav and Shekhar (2019) examined the trend and regional variation in CDs and NCDs in India during 1996-2014 using various rounds of the NSS office. They observed a decrease in the prevalence rate of CDs and NCDs in the valley

region and an increase in the hilly regions of the state during this period. Gupta and Xavier (2018) studied the variation in the prevalence rate of hypertension—one of the most important risk factors of NCDs among in India. Their study revealed that Manipur had one of the highest prevalence rates in India at 20%, 11%, and 16%, respectively among men, women, and total population. Manipur is one of the states with the highest prevalence of substance use in India (Ambekar et al., 2019; Ningombam et al., 2011; Saikia & Debbarma, 2020). The causal relationship between NCDs and consumption of tobacco products, alcohol, cannabis, opiates, etc. is well established in health literature.

### 5.2.3. Public Health Disasters

Manipur is highly vulnerable to various forms of natural disasters because of its distinct geo-climatic, geological, and physical features. It has witnessed an increasing trend of natural disasters such as earthquakes, floods, droughts, and landslides, rendering people homeless and dead. The floods in 2015 was one of the worst in the last 200 years; it affected around 600 sq km of area with more than 500,000 population and claimed at least 20 lives (Davies, 2015). The worst affected areas recorded a 70%–80% increase in cases of water-borne diseases (Sphere India, 2015). The Department of Relief and Disaster Management in collaboration with other departments is also responsible for PH including prevention of water-borne diseases, epidemics and managing solid waste.

### 5.2.4. Health care service delivery in Manipur

The delivery of health care services in Manipur, as elsewhere, are through a network of state run SCs, PHCs, CHCs, DHs, and medical colleges. Table 5.2 shows that, unlike other NE states, Manipur is in a comparatively better position with no shortfall in the number of required PHCs and CHCs. However, the state reports shortfall in terms of human resources, where only 3% of the total specialist posts (namely, OB/GYNs, paediatricians, surgeons, and physicians) have been filled in CHCs that typically serve as first referral units. Eighty two per cent of the sample population had their ailments treated on medical advice provided by a government healthcare service provider, while less than 1% preferred going to an informal health care provider (NSS, 2018)(NSS 75th round, 2018-19).

**Table 5. 2.Number of health facilities in Manipur 2019-20**

| Type of facility | Number of facilities Present | Required | Shortfall |
|---|---|---|---|
| **Subcentres** | 490 | 537 | 8.8% |
| **Primary Care Centres** | 90 | 84 | -7.1% |
| **Community health Centres** | 23 | 21 | -9.5% |
| **Sub divisional/district Hospital** | 1 | | |
| **District hospitals** | 8 | | |
| **Government Medical colleges** | 2 | | |

Source: Rural Health Statistics, 2019

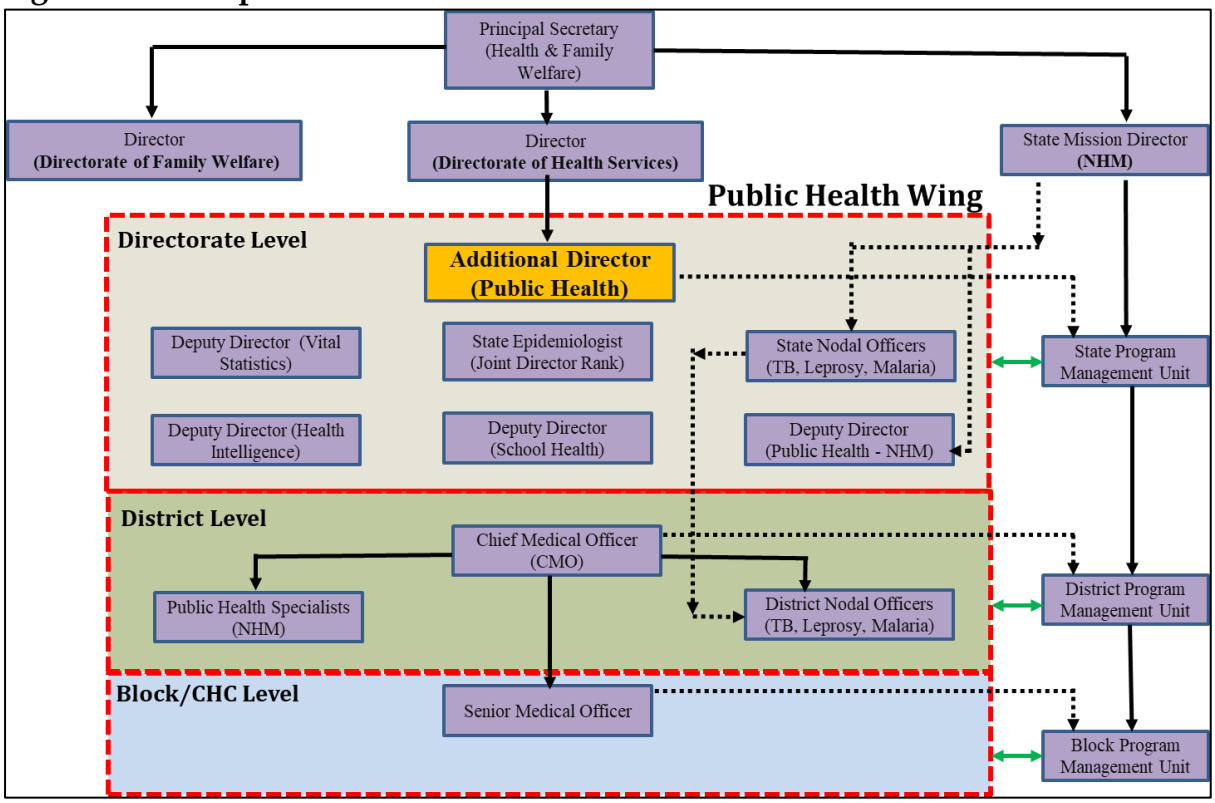
## 5.3. Manipur: Public Health Governance Structure

The Department of Health & Family Welfare headed by the principal secretary consists of two directorates—Directorate of Family Welfare and DHS; in parallel, the State Program Management Unit (SPMU) is led by the state mission director (Figure 5.5.). The Directorate of Family Welfare is responsible for activities/programmes such as immunization, family planning, and MCH, while the DHS is responsible for disease surveillance, PH programmes (such as TB, leprosy, and malaria) and management of healthcare facilities such as DHs, CHCs, and PHCs; the SPMU is responsible for supporting both the directorates in regard to management, planning, financing, monitoring and evaluation of PH programmes funded by the NHM. There are four key positions in the SPMU: state programme manager, state finance manager, state accounts manager and state data officer.

A director heads the DHS, and under the director is an additional director exclusively for PH. The additional director (public health) leads a fairly organised but 'informal' public health wing under the DHS, though not designated as cadre. As a part of this public health wing, at the state level, there is an epidemiologist (who also functions as joint director of public health) and deputy directors from both medical and non-medical streams. There are deputy directors (from medical stream) who have been appointed as state level nodal officers for large PH programmes related to CDs such as TB, leprosy, and malaria. Deputy directors from medical stream also manage other smaller NHM programmes on NCDs, while deputy directors from non-medical

stream are responsible for functions such as biostatistics, school health, and health intelligence.

**Figure 5. 5.Manipur's Public Health Governance Structure**




At the district level, the CMO is the senior most PH position and is responsible not only for the implementation of PH programmes but also managing all the health facilities within the district. Under the CMO, there are again dedicated district nodal officers for family welfare, TB, leprosy, and malaria, and there are PH specialists who are responsible for NHM programmes that focus on NCDs. The district nodal officers and PH specialists administratively report to the CMO but functionally report to the state nodal officers/deputy directors at

the DHS. The CMO also oversees the functioning of the District Programme Management Unit (DPMU). The key role of the DPMU (comprising of the district programme manager, district finance manager, and district data manager) is to support the district health administration in the successful implementation of NHM programmes.

At the block level, a senior medical office is in charge of managing a CHC along with implementation of NHM programmes. The block program manager (appointed by the NHM) supports the senior medical officer in the implementation of all PH programmes at the block level. In Manipur, the CHCs also have a community health officer. They are non-medical graduates and typically start off as female health workers at the entry level. They support the Integrated Disease Surveillance Programme (IDSP) and report to the senior MO. Their other responsibility is to also collect and maintain household records and advise them (senior MOs) on various health care services.

## 5.4. Manipur: Health Service Cadre & PH Leadership Workforce

Manipur does not have a dedicated PH cadre. The Manipur Health Service cadre is a single cadre comprising of both non-specialists (only MBBS degree holders) and specialists (MBBS with medical or public health specialisation). Thus, the cadre comprises of only medical doctors (with or without a specialisation). There are a total of 2,792 sanctioned posts in the cadre, of which 34 of them have a specialisation in PH/community medicine. There are five grades in the cadre: special cadre followed by grades I to IV. Table 5.3 describes the structure of the cadre.

**Table 5. 3.Structure of the Manipur Health Service Cadre**

| Grade | Designations | Total Number of Sanctioned Posts | Permanent | Temporary |
|---|---|---|---|---|
| **Special** | Director | 2 | 2 | 0 |
| **Grade 1** | Additional Director & Consultant | 14 | 13 | 1 |
| **Grade 2** | Joint Director, Chief Medical Officer, Medical Superintendent, State Programme Officer & Senior Specialist | 131 | 124 | 7 |

| | | | | |
|---|---|---|---|---|
| **Grade 3** | Deputy Director, Deputy Medical Superintendent, Senior Medical Officer, District Programme Officer & Specialist | 615 | 580 | 35 |
| **Grade 4** | Medical Officer (MO) | 1385 | 1350 | 35 |
| | Total | 2147 | 2069 | 78 |
| | Leave Reserve @10% | 215 | | |
| | Training Reserve @10% | 215 | | |
| | Deputation Reserve @10 % | 215 | | |
| | Grand Total | 2792 | | |

**Note:** The above cadre structure is based on the Manipur Health Service (Public Health & Medical) Rules, 2018 – Latest Draft Proposal.

As per the cadre rules, to be considered a PH specialist, one must have specialised in any of the following subjects after a MBBS degree–- community medicine, epidemiology, social and preventive medicine, PH, health and hospital administration. However, there is no eligibility criterion specified in terms of either PH qualification or training for any of the PH related posts in the cadre (e.g., CMOs, district nodal officers, senior MOs, etc.). Appointments to these PH-related posts are also open to medical/clinical specialists and are based only on tenure and promotion by selection. On the other hand, the cadre rules clearly specify medical/clinical specialisation as an eligibility criterion for posts such as specialists at health facilities or consultants at the directorate. Neither the DHS nor the district health administration was able to provide us with a detailed description of the roles and responsibilities for each of these cadre positions.

Although the current director of health services has previously held other PH positions, their experience and specialisation are in Anaesthesiology. The CMO we interviewed didn't have any specialisation in PH, while the senior MO we interviewed at a CHC had specialised in microbiology. Only the 'public health specialists' that we interviewed had all specialised in community, medicine. Even though there is an informal public health wing under the additional director (PH) at the DHS, there exists no defined career path for those specialised in PH. The state government does not sponsor any PH-related courses or training programmes for the incumbents of PH-related posts. Only the programme officers received training that was specific to their respective programmes—this was similar to what we saw in Assam. We also observed that several key PH positions were vacant. From our interviews we gathered

that, as on June 2021, 7 out of the 16 districts in Manipur did not have a permanently appointed CMO, and 14 out of the 27 sanctioned "Public Health Specialist" posts were still lying vacant. Despite our persistent follow up, the Directorate was unable to provide us with additional details such as the academic qualifications, trainings completed, gender, vacancies and type of post (permanent or contractual) of all the incumbents in key PH positions.

## 5.5. Manipur: Essential Public Health Functions

To understand the status and implementation of the Essential Public Health Functions (EPHF), we interviewed a few health officials at the district level.[7] While these officials did attempt to give us a comprehensive picture of the EPHF to the best of their abilities, we need to acknowledge the fact that the summary that has been stitched together (Table 5.4) is solely based on inputs from these limited cohort of officials. Their inputs haven't been validated with any secondary data or government documents as these either do not exist at all or are not in public domain.

**Table 5. 4.Status of Essential Public Health Functions (EPHF) in Manipur**

| EPHF | Status | Remarks |
|---|---|---|
| Health Situation Monitoring & Analysis | | • There is a robust process for collecting data on the population's health status. The data also gets segregated program-wise. The National Health Mission (NHM) programme provides technological support and training for the same.<br>• Monitoring of data quality, data analysis, and dissemination needs to be further improved. |
| Epidemiological Surveillance/Disease Prevention and Control | | • Under Integrated Disease Surveillance programme (IDSP), data is collected on epidemic prone diseases on a weekly basis. (6 syndromes & 20 diseases)<br>• Medical officers focus only on their clinical responsibilities, and their poor reporting on diseases & diagnosis makes surveillance very challenging. |
| Research & Development on Public Health | | • No institution is conducting research on local issues, e.g., the increasing cases of non-communicable diseases in the state. |

[7] They included the chief medical officer, district surveillance officer, district tuberculosis officer and district programme manager of Imphal East district and district surveillance officer and district tuberculosis officer of Imphal West district.

| | | |
|---|---|---|
| Policy and Planning | | • The NHM did bring rigor to planning process, which was lacking earlier.<br>• Policy and planning are a top-down approach wherein programme guidelines specified by the centre are being executed by the state/district. Lack of a decentralised planning process. |
| Budgeting and Financial Management | | • Public health (PH) is entirely supported by NHM. The state government does not run any programmes to address state specific issues.<br>• While the district programme manager (NHM) said that they fully received the allocated budgets, the district nodal officers disagreed on the same. |
| Health Promotion and Education | | • Information, education, and communication activities are regularly conducted especially for the big programmes.<br>• Cooperation and support from the community to follow guidelines. |
| Reducing the impact of emergencies and disasters on Health | | • A disaster management team led by the district commissioner has been constituted in each district. The chief medical officer is part of this team.<br>• Inter-departmental collaboration needs to be further strengthened and happen throughout the year and not only during disaster response. |
| Regulation and Enforcement of Public Health | | • Apart from food safety, the health department is not involved in any enforcement.<br>• Regulations and enforcement related to sanitation & waste management bylaws are addressed by the Pollution Control Board & local bodies. |
| Assuring a Competent Public Health Workforce | | • Recruitment of workforce trained in PH is not being prioritised.<br>• Post recruitment, lack of training programmes on PH. |
| Ensuring Quality of Population-Based Health Services | | • Apart from the Indian Public Health Standards for health facilities, there are no other standards for evaluation of population-based health services. |
| Environmental health and Sanitation | | • The health department does not play an active role in this domain even though this function has a direct impact on population health. Public Health Engineering Department, local bodies and Pollution Control Board play a bigger role. |

Note: Green colour denotes that the function is fairly defined and operational in the state. Orange colour denotes that the function is not well defined but operational to some extent in the state. Red denotes that this function is carried out poorly or not the responsibility of the health department.

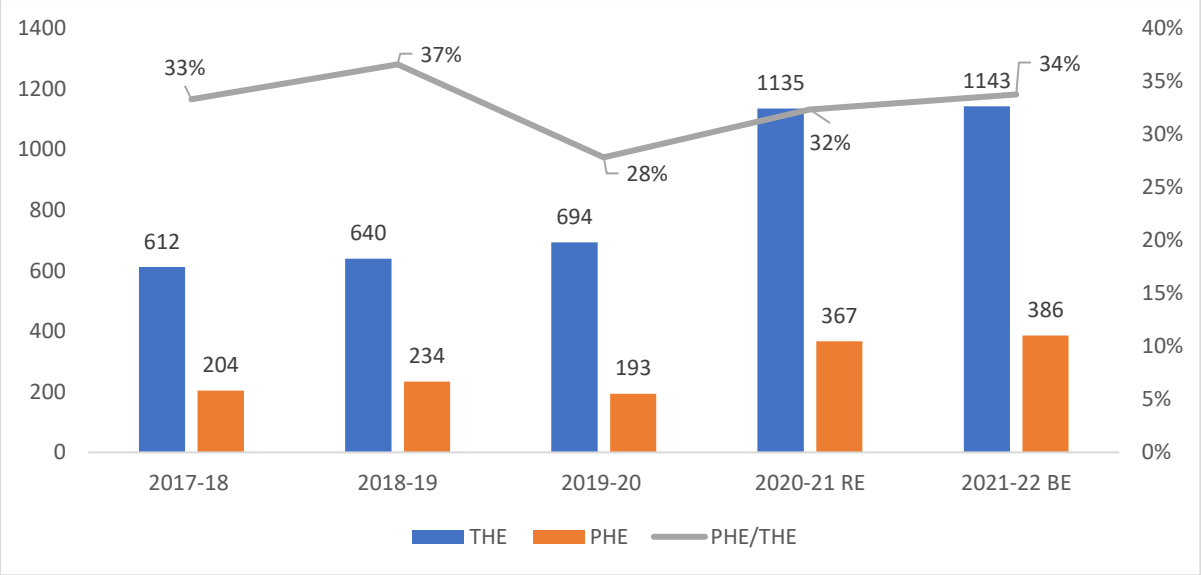
A fairly established process is in place for collecting and analysing data on the population's health status, disease surveillance, and also health promotion-related activities. However, one of the officials mentioned that the findings from analysing the population related data is hardly ever communicated back to the community. Planning and prioritisation with respect to PH programmes largely happens at the state level. That the DHS does not even consult district level officials was identified as one of the major gaps in policy making and planning.

The state's budget allocation towards PH is minuscule in comparison to the funds received under NHM for implementing PH programmes. According to the DPM (a NHM staff member), every district prepares its own health budget by consolidating proposals at every level: SC, PHC, and block. While the government officials at the district level agreed that this exercise is being carried out, they also highlighted that the decisions taken at the state level with regard to budget allocation is seldom based on these proposals. While the enforcement of regulations related to food storage and handling is under the purview of the health department, other subjects of PH importance such as water treatment, sanitation and solid waste disposal are regulated by either the local government, pollution control board, or the PHED with minimum involvement of the health department. The state has also not come up with any specific agenda for research on local PH issues.

## 5.6. Analysis of Public Health Expenditure

Manipur state's total health expenditures have grown at an AAGR of 19% over the period 2017-18 to 2021-22, while the PH expenditure of the state has grown at an AAGR of 23% and that of the NHM expenditures at 12% for the same period. The share of PH expenditure in THE averaged at 33% for the period 2017-18 to 2021-22 and hovered between 28% to 37% during the same period (Figure 5.6).

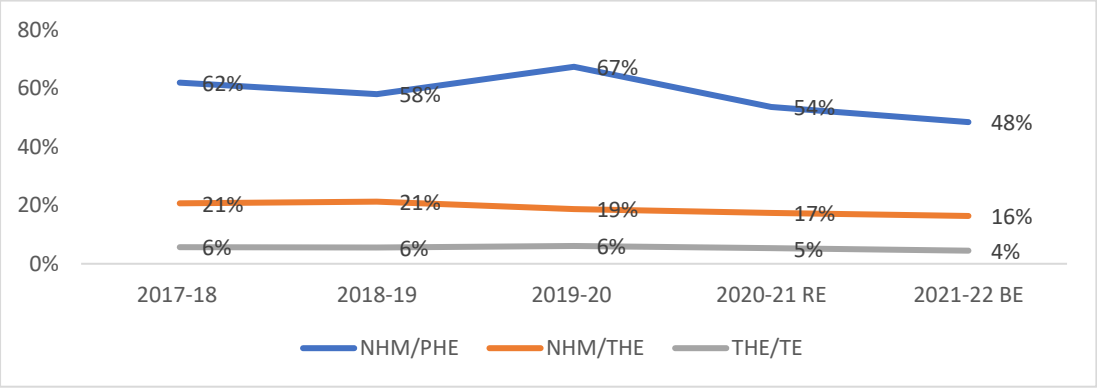
**Figure 5.6. Total Health Expenditure and Public Health Expenditure over years (INR in crore)-Manipur**




Note: Note: PHE : Public health Expenditure, THE : Total Health Expenditure

The share of NHM expenditures in the PH expenditure and THE serves as a proxy of the share of GoI in the state health expenditure because of its share of 90% in CSS. The share of NHM in THE decreased from 21% in 2017-18 to 16% in 2021-22 (Figure 5.7). The share of NHM in the PH expenditure has averaged at 58% over the period 2017-18 to 2021-22. The share of health expenditure in the total expenditure of state has decreased from 6% to 4%.

**Figure 5. 7.Share of National Health Mission (NHM) expenditure and Health expenditure in Manipur**




Note: PHE is Public Health Expenditure, THE is Total Health Expenditure, and TE is Total Expenditure in state.

## 5.7. Public Health Cadre Formation: Insights & Takeaways

### Current scenario with regard to PH administration

In Manipur, key PH positions have traditionally been occupied by clinicians who come with a curative care mindset and perceive PH as only hospital/health facility administration. The CMO and the senior MO are very critical PH positions but are largely held by doctors who do not have any PH qualification or training. The Manipur Health Service is a common cadre comprising largely of clinical specialists and a small fraction of PH specialists. In the absence of a dedicated PH cadre, a majority of PH positions are occupied by clinical specialists. For e.g., one of the senior MO's we interviewed at a CHC in Imphal district is a psychiatrist by training. In the absence of PH training and orientation, MOs and senior MOs tend to focus only on the curative/clinical side and ignore their PH responsibilities. Lack of clinical specialists at CHCs further adds to the need for them to focus only on the curative/clinical side. Hence, they tend to rely heavily on NHM staff such as the programme, finance and data managers for PH programme planning and implementation. In Manipur, there have been 16 directors of health services so far, and only two of them have had PH qualification/training.

### Clinical and PH specialists have very divergent mindsets

The senior PH officials that we spoke to were of the opinion that clinical specialists and PH specialists have very divergent viewpoints when it comes to looking at community health. Clinical specialists tend to have a curative/individual patient mindset whereas PH specialists have a preventive/population-based mindset. As one senior PH official put it, 'Clinical specialists believe that a patient should go to the doctor, whereas it is the other way round for a PH specialist'. Hence, they feel that from the entry level itself, there need to be two MOs working in a PHC: one dedicated for individual patient care and the other for managing PH programmes and community health-related initiatives at the grass root level.

### Demand for a dedicated PH cadre along with a separate PH Directorate

In the current pandemic era, with an aim to bring increased attention to PH issues of the state, many senior PH officials are pushing for the creation of a

separate Directorate of Public Health. They would like the existing DHS to be bifurcated into two directorates: one for PH and another for medical/clinical services. Correspondingly, they want the Manipur Health Service cadre to be also bifurcated into PH cadre and a medical specialist cadre. The PH cadre rules will define the eligibility criteria in terms of qualifications/training for key PH positions along with a clear career progression. The PH cadre rules will also provide other details such as the composition, breakup, number of posts, and pay scales. Senior PH officials in the health department are already working on a blueprint for both the directorate & PH cadre structure. The state government is in discussion with the centre to come up with a Manipur Public Health Act. The formation of a separate PH cadre is being recommended to be included in this act. While preparing this blueprint, one of the needs that has been identified is the position of a deputy CMO who can act as a bridge between the CMO and district program officers and also to support the CMO in administration of both PH programmes and health facilities.

### An all-encompassing PH Cadre that should also include non-medical professionals

A senior PH official was also of the opinion that roles such as data manager, finance manager and program manager (which are currently part of the NHM contractual staff) should also be included under the larger umbrella of the PH cadre as permanent staff, thus paving the way for non-MBBS professionals to become part of the PH cadre. He recommended that the current NHM staff should be completely subsumed within the proposed Directorate of Public Health and that the NHM programme funds should also be, therefore, managed by the Directorate of Public Health. In the long term, apart from MBBS professionals with a PH specialisation, he also envisioned the creation of various sub-cadres within the larger PH cadre so that clear career paths are defined for various non-MBBS professionals, such as i) frontline PH workers, ii) technical experts (such as epidemiologists/entomologists), and iii) programme managers—these roles can enable them to grow to senior administrative positions. He strongly felt that one needed to treat the PH cadre as a sort of an all-encompassing umbrella organisation/association/union that could strengthen boundaryless collaboration between NHM staff and state-appointed officials. Those arguing for a separate PH cadre in the state consider lack of defined career paths for PH specialists a barrier and question how a gynaecologist is considered qualified to become the additional director of PH,

but a PH specialist, on the other hand, cannot practice as a gynaecologist at a district hospital.

### Need for a workforce trained in various aspects of public health

The consultations with officials suggested that the research on local PH issues was absent, and even the state wing of the ICMR (Indian was not functioning anymore. Apparently, a lot of data is being collected but very little of it is being analysed. One way to address this issue is by also including non-medical professionals such as biostatisticians and data scientists within the PH cadre. The Tamil Nadu model was considered appropriate where the responsibility of secondary and tertiary health care services could be managed by a medical/clinical specialist cadre, whereas the PH services along with PH could be managed by the PH cadre.

According to the district level officials[8] engaged with PH responsibilities, all PH specialists at the district level were doctors with a specialisation in community medicine/PH. However, due to shortage of clinicians, the PH specialists were also being regularly assigned clinical duties, more so during the pandemic. One of them remarked, 'In our health department, anyone can be asked to do anything since the job roles are not being assigned as per an individual's qualifications'. They too felt that the creation of a dedicated PH cadre would ensure that PH specialists pursue only a PH career path. One of the senior health officials informed us that the unspent balance of NHM programme funds is piling up in Manipur since the utilization rates are extremely poor. One of the reasons she attributed this to is that most CMOs come with only a clinical background and are not trained in health financing and management. Public health in Manipur, as elsewhere, is synonymous with the NHM. The state government does not allocate any separate budget for local PH programmes or initiatives that could be critical to the state.

### PH Cadre creation may further promote working in silos

The non-PH officials as well as senior officials posted in the health department did not share the same opinion about the need for a separate PH cadre. They

[8] We also spoke to a few public health specialists who worked as district nodal officers for various NHM programs and one of them was also the district surveillance officer for the IDSP.

expressed concern that the creation of a dedicated PH cadre could further widen the gap between PH and clinical services. According to them, the existing two directorates—health services and family welfare—already work in silos and do not collaborate with each other. Their view was that many of the governance-related decisions that could perhaps work for large states may not work well for a small state such as Manipur. One of the senior Indian Administrative Service officers felt that instead of creating a dedicated PH cadre it may be more effective to instead implement the recommendations of the 15th Finance Commission, which emphasises on the creation and strengthening of block public health units[9].

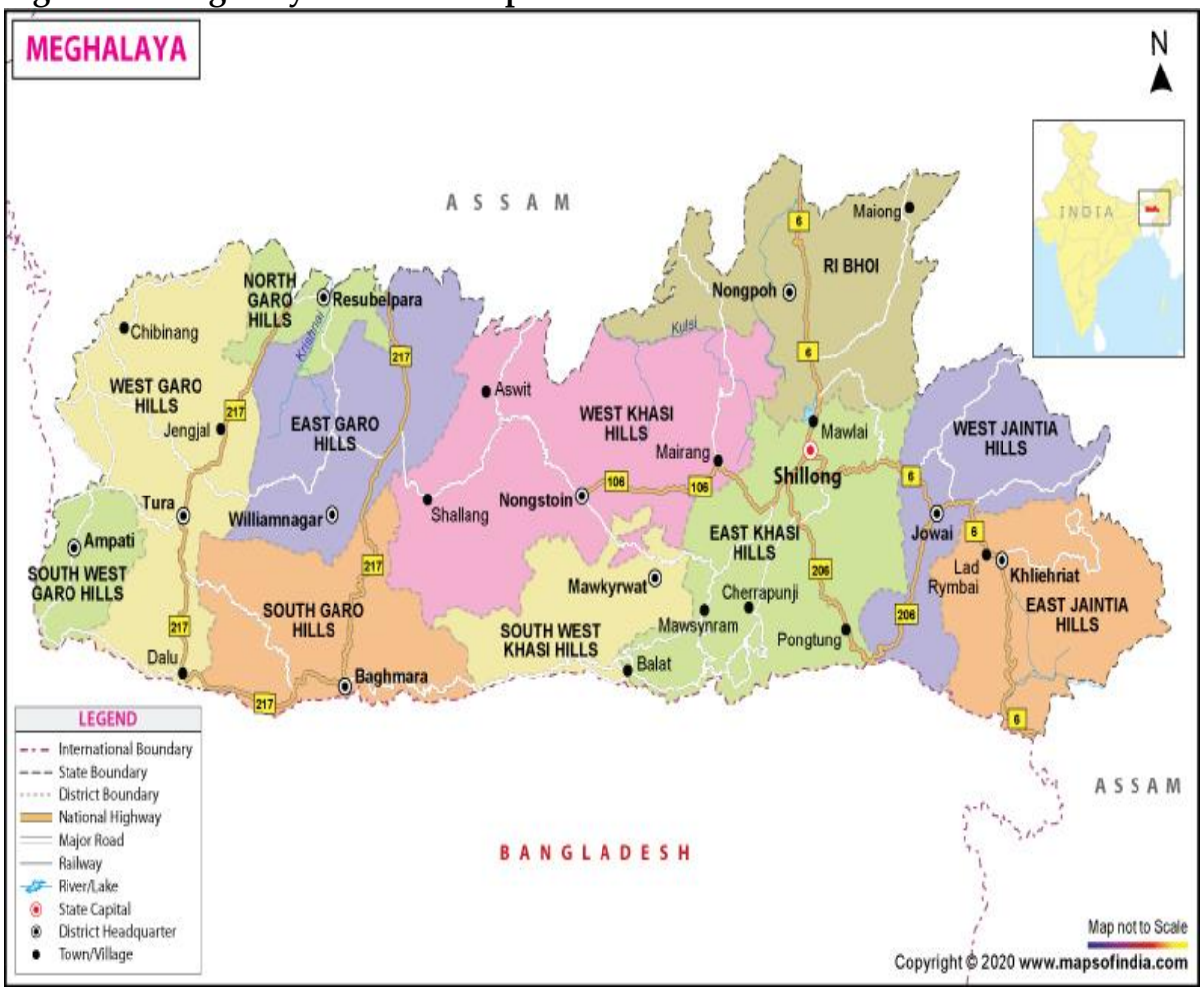
Manipur was the only one out of the four study states, where a significant number of health department officials had PH qualifications. However, when issues such as working in silos, primacy of clinical health care, and lack of clarity in terms of roles and responsibilities are compared, there is not much difference between Manipur and Assam.

[9] As per the IPHS guidelines, a block public health unit is envisaged at the CHC and shall include a public health specialist.

## 6. Meghalaya

Meghalaya is known for its difficult and inaccessible hilly terrain, which ranges from 500 to 2089m of heights. The wettest region of the world is present in Meghalaya, the Cherrapunji–Mawsynram belt, with an average of 7500 mm of rainfall per year. It has 11 administrative districts. Almost 80% of its people live in rural areas; 86% belong to the ST, wherein more than 90% of its tribal population lives in rural areas (Census 2011). The Khasi people form the largest tribal group, followed by the Garos and then the Jaintiyas. Khasis and Garos mainly live in the separate areas of rural Meghalaya, referred to as the Khasi Hills region and the Garo Hills region. Four districts are in the Khasi Hills region and three in the Garo Hills region. Ribhoi is the only district of Meghalaya that has been identified as an aspirational district by NITI Aayog.

**Figure 6. 1.Meghalaya Political Map**



The percentage of literate women is higher in Meghalaya (82.8% in 2015-16, NFHS-4) than in all-India (68.4%) in the same year. The same is true for the sex ratio at birth, which is 1,009 (NFHS 4)—this is also higher than the all-India average. However, the sex ratio at birth in urban Meghalaya is 891 (lower than the Indian average), whereas in rural Meghalaya is as high as 1,030. Meghalaya is also a matrilineal society.

The state has very poor connectivity due to its landscape and forests; only 34% of the state is connected by roads. Insurgency and terrorism, border disputes with the neighbouring state of Assam and the neighbouring country Bangladesh as well as internal unrest due to demand for a separate statehood are commonly known issues in the state. These issues impede the smooth functioning and implementation of the healthcare services in the state. However, the state has seen gradual improvements, e.g., the number of households with improved drinking water was 79.2%, while the percent of households with improved sanitation stood at 82.9% in 2019-20 (IIPS & ICF, 2021a)(NFHS-5 Meghalaya factsheets).

**Table 6. 1.Components of Revenue (INR in Crores) and its growth over years (in percent) (2015 to 2022) in Meghalaya**

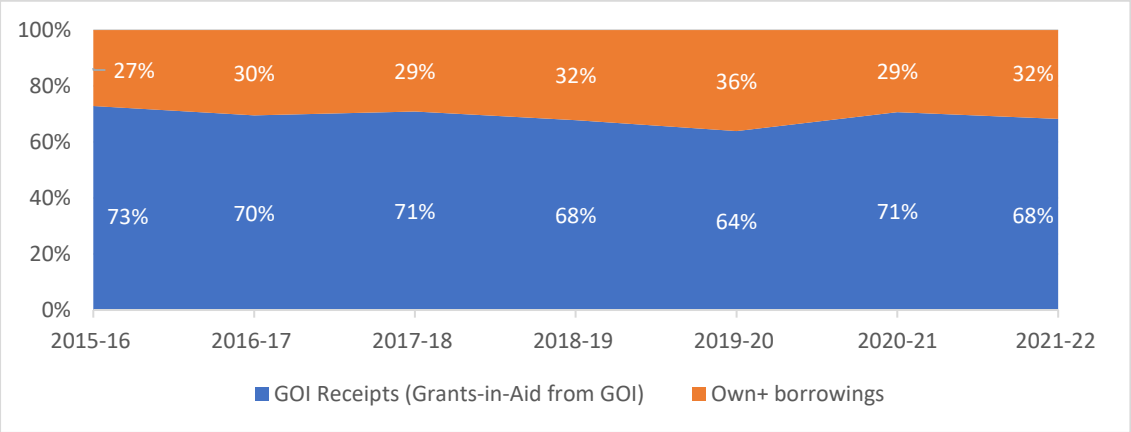
| Revenue | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|---|---|
| **Own Revenue** | 1,285 | 1,871 | 1,817 | 2,221 | 2,421 | 3,067 | 3,273 |
| **Share of Taxes** | 3,276 | 3,911 | 4,323 | 4,889 | 4,212 | 5,999 | 5,105 |
| **Grant in Aid from GoI** | 2,481 | 3,157 | 3,134 | 2,609 | 2,780 | 6,286 | 6,854 |
| **Non debt capital receipts** | 19 | 19 | 17 | 18 | 31 | 27 | 30 |
| **Borrowings** | 837 | 1,210 | 1,225 | 1,325 | 1,496 | 1,995 | 2,248 |
| **Total Receipts** | 7,899 | 10,168 | 10,516 | 11,061 | 10,941 | 17,375 | 17,510 |
| | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **Average** |
| **Own Revenue** | 46% | -3% | 22% | 9% | 27% | 7% | 18% |
| **Share of Taxes** | 19% | 11% | 13% | -14% | 42% | -15% | 9% |
| **Grant in Aid from GoI** | 27% | -1% | -17% | 7% | 126% | 9% | 25% |
| **Non debt capital receipts** | -1% | -7% | 3% | 74% | -12% | 10% | 11% |
| **Borrowings** | 45% | 1% | 8% | 13% | 33% | 13% | 19% |
| **Total Receipts** | 29% | 3% | 5% | -1% | 59% | 1% | 16% |

## 6.1. Financial Status

The own revenues has been growing at an annual average growth rate of 18% per year in recent past, indicating a very steady progress (Table 6.1). However, the share of taxes from GoI has declined in their growth in 2019-20, while their AAGR for the period 2015-16 to 2021-22 remained at 9%. Grant-in-aid has grown at an annual average growth of 25% owing to higher transfers during the years 2019-20 and 2020-21, which are pandemic years. Borrowings have grown at an annual average growth rate of 19%, which is the second highest among the revenue components of the state.

The transfers from the GoI (tax devolution and grant-in-aid) make up about 69% of the revenues, while the own revenues and borrowings together account for 31% (Figure 6.2). The total liabilities estimated for the year 2021-22 stood at 37% of GSDP or 93% of the revenue receipts.

**Figure 6. 2.Share of GoI transfers and Own revenue +borrowings (percent)**




## 6.2. Health status

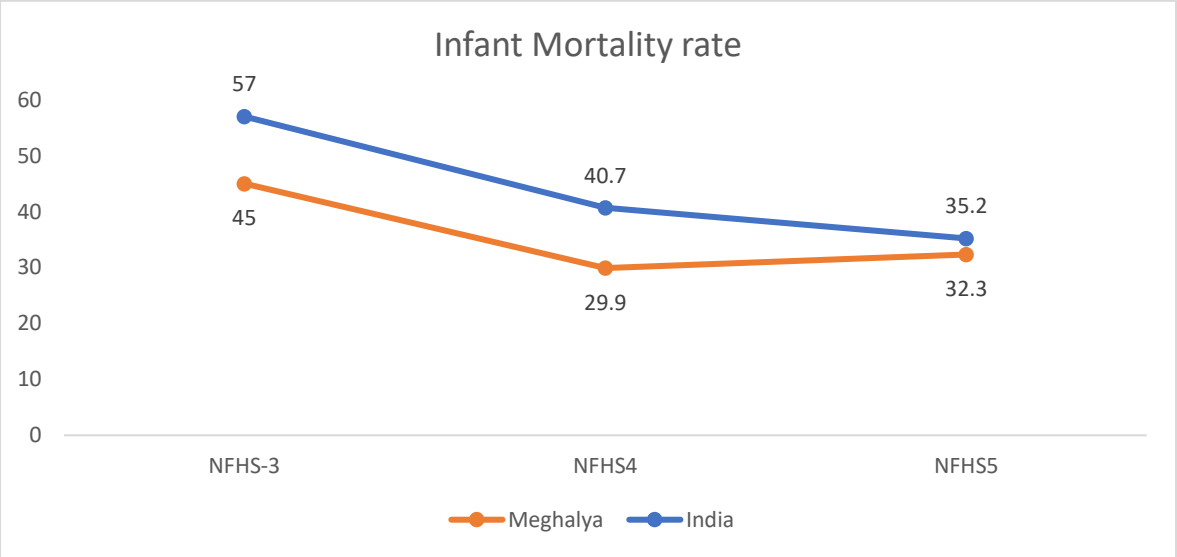
The areas of major concern in Meghalaya have been MCH, CDs, and NCDs.

### 6.2.1. Maternal and Child Health:

Statistics from NFHS-3, NFHS-4, and NFHS-5 show that from 2005-06 to 2019-20, there were significant improvements in infant mortality rates in Meghalaya, and the rates remained better than the national average in 2019-20 (Figure 6.3). The report by ICMR on disease burden in states showed that the largest causes of deaths (38.4%) in children aged 0 to 14 years in the state were diarrhea and lower respiratory infections in 2016, followed by death due to neonatal disorder (30.4%). Meghalaya also has the one of highest MMR in the country at 211 deaths per 100,000 births (2015-16)(NHM Meghalaya, n.d.). The state has seen some improvements in the

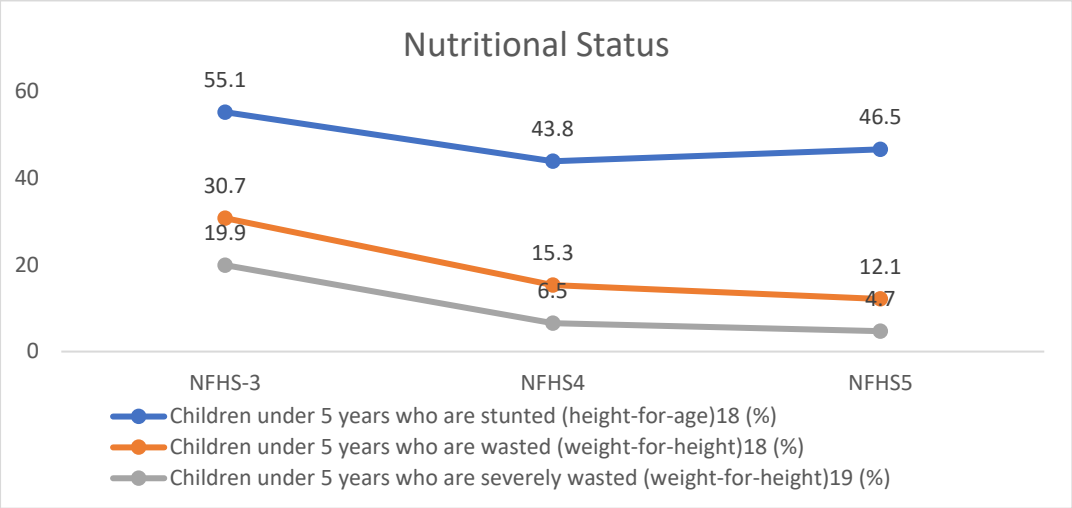
number of institutional deliveries, from just 29% in 2005-06 to 58.1% in 2019-20, but only 52.2% of women had at least four antenatal visits in 2019-20. The national average for the% of institutional births was already at 88.6% in 2019-120, which shows how dire the situation for maternal indicators is in Meghalaya. The percentage of institutional deliveries in rural Meghalaya is almost half of in urban areas. In urban areas, the percentage of institutional deliveries is 82.7%, whereas in rural it is just 54.3% according to NFHS-5 factsheet. Due to poor infrastructure and a strong preference for traditional medicine, women are scared of going to hospitals and so they deliver babies at home at risk to their lives, pointing to the low institutional deliveries (Shah, 2018).

**Figure 6. 3.Infant Mortality Rates in Meghalaya and India from 2005-06 (NFHS-3) to 2019-20(NFHS-5)**




Looking into nutritional status of children in the state (Figure 6.4), the percentage of children under 5 years of age who were stunted was 46.5% in 2019-20, which is amongst the highest in the country. However, figures for wasting show that the percentage of children suffering from wasting has actually decreased from 30.7% in 2005-06 to 12.1% in 2019-20.

**Figure 6. 4.Nutritional status of children under 5 years in Meghalaya 2005-06 to 2019-20**




Source : National Family Health Surveys 3, 4, and 5 Meghalaya fact sheets.

### 6.2.2. Communicable and Non-communicable diseases:

Meghalaya too, like Assam, has an epidemiological transition level of 0.64, which is suggestive of large burden of both CDs and NCDs. The largest cause of deaths in people aged 40 to 69 years in 2016 was cancer at 24.9%, followed by cardiovascular diseases at 20.6%. Cardiovascular diseases were the cause of largest number deaths in the age group of above 70 years. The report also showed that lower respiratory infections, diarrhoeal diseases, TB, and malaria were the most common diseases causing premature mortality in the state (Indian Council for Medical Research(ICMR) et al., 2017).

### 6.2.3. Health care delivery in Meghalaya

Table 6.2 on the number of health facilities in Meghalaya shows a shortfall of 42% in the number of SCs in the state. Although the number of nurses and doctors in PHCs seem to be adequate as per the health management and information system, there is a severe shortage of specialists that is 97% of posts for paediatricians, surgeons, OB/GYNs, and physicians at CHCs is not filled. According to the 75th NSS, the percentage of ailment treated on medical advice by healthcare service providers by government/public hospitals is 54.9% and by private doctors/ clinics is almost 15% in rural areas. However more than 30% of the rural population preferred going to informal service providers.

**Table 6. 2.The number of public health facilities in Meghalaya, 2019-20**

| As on 2019 | Meghalaya | | |
|---|---|---|---|
| | **Required** | **In Position** | **Shortfall** |
| **Sub centres** | 822 | 477 | 42% |
| **Primary Health Centres** | 124 | 118 | 5% |
| **Community Health Centres** | 31 | 28 | 10% |

**Source: Rural Health Statistics, 2019**

Most tribal people in Meghalaya prefer to opt for traditional medicine, indigenous tribal traditional medicine, as practiced by the traditional healers of Khasi and Garo tribes of Meghalaya who use medicinal plants to cure (Shah, 2018). Indigenous traditional medicines and traditions are largely undocumented. Tribal medicine is reported to be used for both minor ailments and major diseases. The prevalence of reported preference for tribal medicine is higher for minor ailments than for major diseases (Albert S. et al. 2015). Studies have shown that the treatment of diseases in tribal communities needs to take into account these traditional practices to bring about improvements in health indicators through BCC methods.

### 6.2.4. Other Public Health Issues

According to the disaster-prone map of the country, Meghalaya is a multi-hazard state, having hazards such as earthquakes, flash floods, landslides, cyclonic wind etc.(Meghalaya State Disaster Management Authority, 2016). Though the state reports the highest rainfall in the world, most of the villages situated in the higher slopes suffer mainly from shortage of drinking water throughout the year. This according to a study has led to people depending on unhygienic surface water for drinking purposes.(Laloo & Hemalatha, 2011). The percentage of households with no access to bathrooms is 22% in rural areas and 1% in urban areas(NSS, 2018) (NSS 76). Meghalaya government. partnered with Water and Sanitation Programme in 2009 to start a community-led and decentralised approach to bring collective behavioural change at community level. These measures resulted in the increase of the toilet coverage (safe toilets) in rural Meghalaya to 71% in 2013 from

near nil figures of 2004-06 (Lyngdoh, 2014). This further improved to 82% at the time of NFHS-5 (2019-20).

## 6.3. Structure of Department of Health and Family Welfare:

A majority of the PH functions in the state rest with the DoHFW. In other words, PH function of health situation monitoring and analysis, disease surveillance, research, planning and policy, budget and financial management, health promotion and education, assurance of a competent PH workforce, and surety of quality population-based services rest with DoHFW. However, certain other functions like environmental and health sanitation (under state pollution control board), disaster management (under state disaster management authority) as well as law enforcement are not within the department's purview.

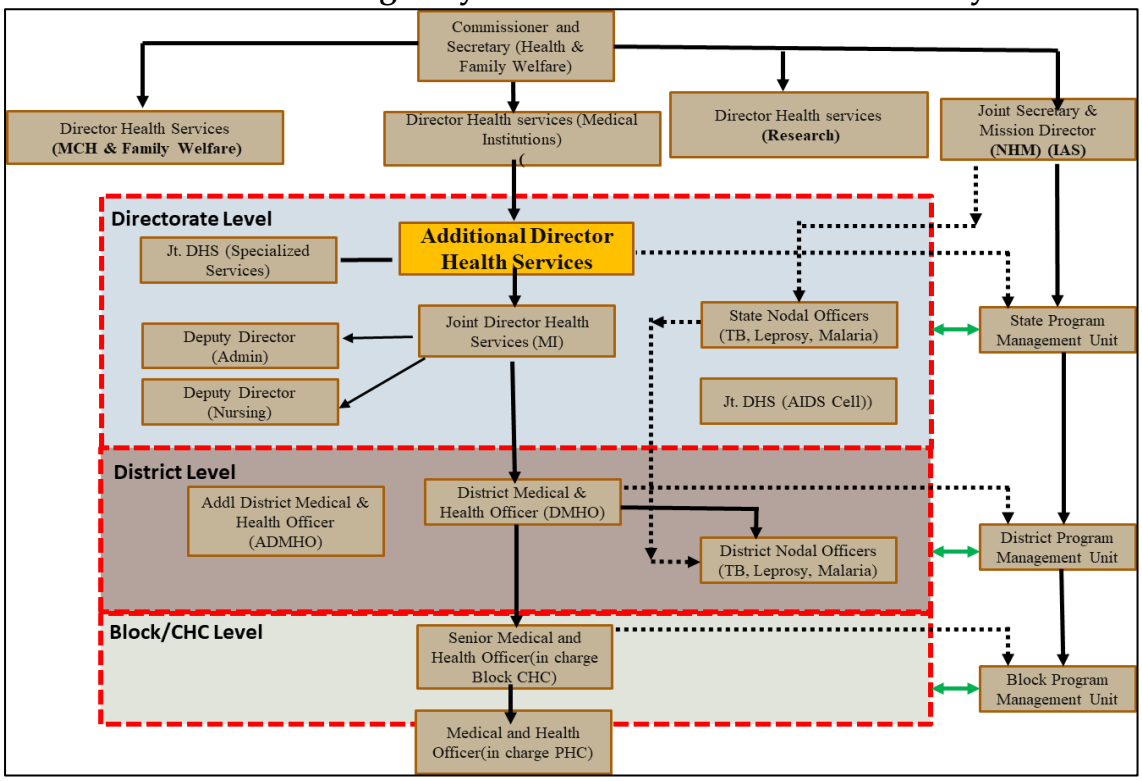
At the Secretariat level, the principal secretary leads the DoHFW under the Ministry of Health and Family Welfare. There are various joint secretaries and under-secretaries under the principal secretary. The mission director for NHM is also the joint secretary in this state and is an IAS officer. Below them, there are three directorates of health services: DHS-medical institutions (MI), DHS-MCH and Family Welfare (MCH&FW), and DHS-Research. Each is headed by a director at the state level. The largest of the three directorates is DHS-MI, and it looks after personnel, service delivery, and all national programmes except those related to MCH&FW. The latter is looked after by the DHS-MCH&FW.

Under the mission director for NHM at the secretariat level is the state programme manager at the state level, the district programme manager at the district level, and the block programme manager at the block level.

## 6.4 Meghalaya Health Services Cadre:

The Meghalaya health services rules document of 1982 and 1990 describe in detail the processes of recruitment and promotion of various posts under the Meghalaya health services. There are three types of posts under the health services: i) general duty stream appointed for general duties, ii) specialist stream appointed for specialist posts, and iii) common posts, which are posts included in the senior grade for which the first two streams are considered for promotion. There are four grades of services: senior grade, and grades I to III, with the senior grade being the most senior of the services. (Figure 6.3)

**Table 6. 3.Structure of Meghalaya Health Services for General Duty Stream Only**




The structure of the largest of the three directorates, DHS-MI, is described in detail below. At the level of entry into the services, the candidate is posted as an MHO, within the general duty stream. If the candidate has a postgraduate degree, they are taken on as a junior specialist, and they are also given an option of either joining the generalist or specialist stream. The specialist stream candidate then goes on to become a senior specialist (grade II) and finally to become superintendent of the hospitals in grade I. Hence, candidates of the specialist stream have clinical roles as opposed to those from a generalist stream who have PH duties.

The senior medical and health officers and MHOs get promoted to posts of SDMHOs, as well as officers of various programme officers like district TB officer, zonal leprosy officer, district MCH officer, assistant director of Pasteur Institute in grade II. Specialists are promoted within their streams like surgery, obstetrics and gynaecology, ophthalmology, etc. Grade I posts include positions of DMHOs, additional DMHOs (ADMHOs), superintendents and additional superintendents of hospitals and principal of Regional Family Welfare Training Centres. From here, appointments to senior grade posts can be from any of the two duty streams and based on the select list prepared by the department promotion committee. The following are included under this category: DHS-MI, DHS-MCH&FW, director of

the Pasteur Institute, additional director of health services and joint director or consultants.

The overall health administration at the district level is taken care of by the DMHO, who reports to DHS-MI, while the ADMHO's role is largely within the DHS-MCH&FW). The total authorised strength of the health services cadre was 281 in 1982. At present, all the important PH positions are filled in all the 11 districts of the state. According to the list provided by the officials, currently there 44 officers at the level of district and above in the state. However, nodal officers for malaria, leprosy, TB and Integrated Disease Surveillance Programme (IDSP) are vacant in the four districts of East Jaintia Hills, Southwest Khasi Hills, Southwest Garo Hills, and North Garo Hills. At least three districts, did not have an ADMHO and an MCH officer. In Southwest Khasi hills, there are no official present except for the SDMHO who holds charge as a DMHO. As all CHCs and PHCs come directly under the purview of the DMHO, it was felt that block medical health officer or an additional post under the DMHO would ease the burden of administration at the district. On a positive note, it was observed that the DMHO, district leprosy officer, and DSO in East Khasi Hills district had qualifications in PH or field epidemiology. In addition to the 44 administrative officers, the state also had 608 MOs and 162 specialists in position as of July 2021. However, it was not possible to decipher how many of the above were currently contractual under NHM.

## 6.5. Essential Public Health Functions

**Table 6. 4. Essential Public Health Functions (EPHF) in Meghalaya**

| | | | |
|---|---|---|---|
| EPHF 1 | Health situation monitoring and analysis | | Every institution/ department carry out separately. |
| EPHF 2 | Epidemiological surveillance | | It is done by the District Surveillance Officer (DSO) who is specialised in their concerned department, also a PH specialist who does the evaluation. It is not up to the mark, lacks in laboratory tools and dedicated staff. |

| | | | |
|---|---|---|---|
| EPHF 3 | Research | | There is no specific research agenda at district level |
| EPHF 4 | Planning and Policy | | Only inputs are taken but no consultation from the district officials |
| EPHF 5 | Budgeting and Financial Management | | The budgets are prepared only for National Health Mission at the district level. The final decision is at the state level. |
| EPHF 6 | Health Promotion and Education | | The non-governmental organisations, village head, Accredited Social Health Activist [ASHA]—all are involved in awareness and health campaigns |
| EPHF 7 | Reducing the Impact of Outbreaks, Emergencies and Disasters on Health | | Through the district commissioner's office, meetings and instructions are released for emergency preparedness in collaboration with disaster management department |
| EPHF 8 | Regulation and Enforcement in Public Health | | Although there is awareness on laws, there is no clear information on enforcement. Associated public health concerns like water and sanitation, and solid waste disposal do not come under the purview of the health department except for food storage, where they have a food inspector. |
| EPHF 9 | Evaluation and Promotion of Equitable Access to Necessary Health Services | | The focus is on providing services, and there have not been any measures for evaluating equitable distribution of services. |
| EPHF 10 | Assuring a Competent Public Health Workforce | | All appointments are done at the state level or at the level of Directorate of Health Services, and there is no political influence. There exist vacancies and infrastructure shortfall, and there is no PH training/ |
| EPHF 11 | Ensuring the Quality of Population-Based Health Services | | Internal quality assurance of internal evaluation and central evaluations is done every year. |

| | | | |
|---|---|---|---|
| EPHF 12 | Environmental Health and Sanitation | | The pollution control board is the main authority who co-ordinates with other concerned departments. |

Note: Green colour denotes that the function is fairly defined and operational in the state. Orange colour denotes that the function is not well defined but operational to some extent in the state. Red denotes that this function is carried out poorly or not the responsibility of the health department.

Table 6.4 shows how Meghalaya's health department fares in executing various PH responsibilities. These grades are based on four EPHF interviews that were conducted at the district level with a state program manager, district medical officer, DPM and a district tuberculosis officer. Like most states, the main responsibility of the district health office lies in execution of the various central and state schemes (mainly NHM). Disease surveillance and health promotion are two functions that are clearly defined in the state. Although there is a directorate for research in the state, its activities are related providing of laboratory services and production of some vaccines and PH research is largely ignored.

Policy and planning are undertaken the state level with few inputs from the district level. As one interviewee said, 'Individual programmes lost the decision-making capacity after advent of NHM. The programme officer used to make the plan earlier, under the supervision of the DMHO and if the amount was not enough, then the DMHO would release the fund, and if not, the deputy commissioner joins the DMHO as they both have a joint account for releasing funds of programmes. Now, the state single-handedly deals with every programme funding. Hence, the planning is pre-set by the state without consulting the district. The district has no power in planning'.

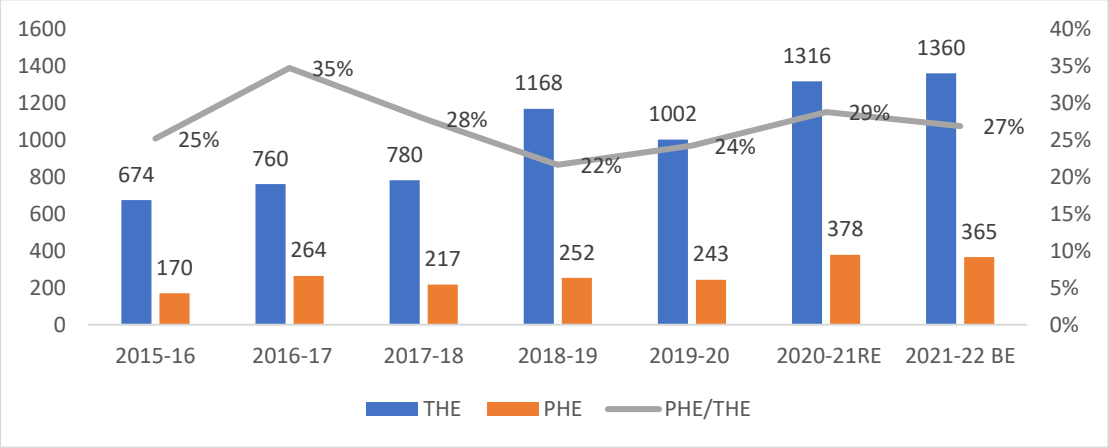
Environment, sanitation, and hygiene, and disaster management are outside the purview of the health department and are carried out by other departments like the State Disaster Management Authority, PHED and pollution control board, etc.

## 6.6. Analysis of Public Health Expenditure

Meghalaya state's total health expenditures have grown at an AAGR of 14% over the period 2015-16 to 2021-22. while the PH expenditure of the state has grown at AAGR of 17% and that of the NHM expenditures at 14% for the same period. The share of PH expenditure in THE averaged at 27% for the period 2015-16 to 2021-22 and hovered between 22% to 35% during the same period. The share of PH expenditure

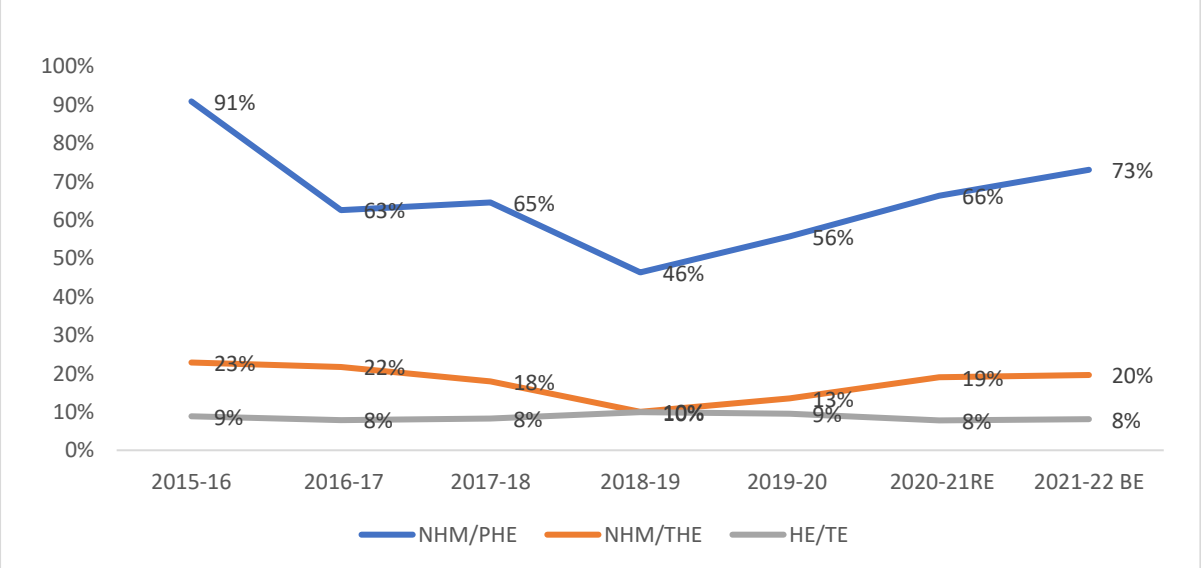
as a proportion of THE has shown a decline from 58% in 2017-18 to 49% in 2021-22 (Figure 6.5).

**Figure 6. 5.Total Health Expenditure and Public Health Expenditure over years (INR in crore)**




The share of NHM expenditures in the PH expenditure and THE serves as a proxy of the share of GoI in the state health expenditure because of its share of 90% in CSS. The share of NHM in THE decreased from 23% in 2015-16 to 10% in 2018-19 and again increased to 20% 2021-22 (Figure 6.6). The share of NHM in the PH expenditure has averaged at 66% over the period 2015-16 to 2021-22. The share of health expenditure in the total expenditure of state has hovered around a healthy 8.5% to 9%. This had reached 10% during 2018-19.

**Figure 6. 6.Share of NHM expenditure and Health expenditure**



## 6.7. Public health Cadre: Insight and Takeaways

The state recently came out with the Meghalaya Health Policy, 2021 which talks about a positive health model to address issues such as gender inequality and poverty along with provision of health care for its citizens to lead a longer, healthier life. The policy also hopes to undertake a decentralised approach where-in it aims to 'actively engage medical officers, frontline workers, civil society, grassroots organisations and CHCs & PHCs, and build their capability to collaborate with the State on all aspects of the decision-making process such as problem diagnosis, policy design, implementation and evaluation' (Meghalaya Health & Family Welfare Department, 2021)

### Current Health Services Cadre

Meghalaya health services splits the cadre into generalists and specialists, providing a clear delineation between administrative officials and clinical physicians. Very few of the administrative officials, however, came with a PH background. As explained by a senior official, 'There is no proper PH orientation for the health cadres in the department. The orientation is largely focussed on the delivery of PH programmes under NHM'. Although in our interviews with East Khasi Officials we saw some with PH qualifications, this district is the capital district and cannot be taken as representative of other districts.

### Need for a PH cadre

Another issue of whether the current set-up was adequate was garnered a mixed response by interviewees. Some district level officials were of the opinion that there needed to be an additional administrative official under the DMHO or an official who is in charge of the block administration. Currently, it is only the block programme manager under the NHM who takes care of programmes at the block level, while senior MHOs oversee individual health facilities like CHCs of PHCs. While a senior official felt that three officials were needed at district level: one dedicated to public health, one for administration and one for medical institutions.

Another senior state official cited the example of how NHM has helped the state improve the health infrastructure and programme implementation in the state since its inception, which was due to NHM's administrative capacity. He felt that this

itself was a strong case to have a PH cadre that would provide the required administration and management capacities that current medical officials lacked. However, he added that one needed to be mindful that though a separate cadre could bring focus to public health, it was not an answer; only when the medical officers/ doctors at the PHC/SC perform their dual roles of curative and preventive care effectively can the health system address the PH issues in a comprehensive manner.

These two opposing views indicate that whether Meghalaya chooses to have a separate PH cadre or not, PH training is essential. The question then arises on who should be provided this training.

### Training in public health

'Minimum eligibility should be an MBBS degree with diploma or Master of PH; Doctor of Public Health, (Master of Applied Epidemiology, Doctor of Medicine in Community Medicine fall under the PH. For non-medical posts, training must be provided in public health.' The aforementioned statement sums up the most common reply to the question on eligibility for the PH cadre. Most officials felt minimum eligibility should be an MBBS degree. Meghalaya is one of the states that has as an Institute for Public health, started as a joint endeavour by the Government of Meghalaya and Public Health Foundation of India. Interviews showed that although the institute offered PH courses, it was difficult for current employees to pursue a full-time two-year course due to time constraints.

Training nurses in PH was also a suggestion that was put forth by some officials. It was suggested strongly that these nurses should be separate from those practicing in hospitals. This statement also shows the importance of separating clinical duties from PH ones. The current cadre structure to some extent separates clinicians from PH administrators; however, a majority of them only have clinical training and they lack PH training. The officials and staff are given programme-specific training under the NHM. Thus, like their respective programmes, the officials exist in silos, hence rarely contributing to planning and budgeting policies even within their programme areas.

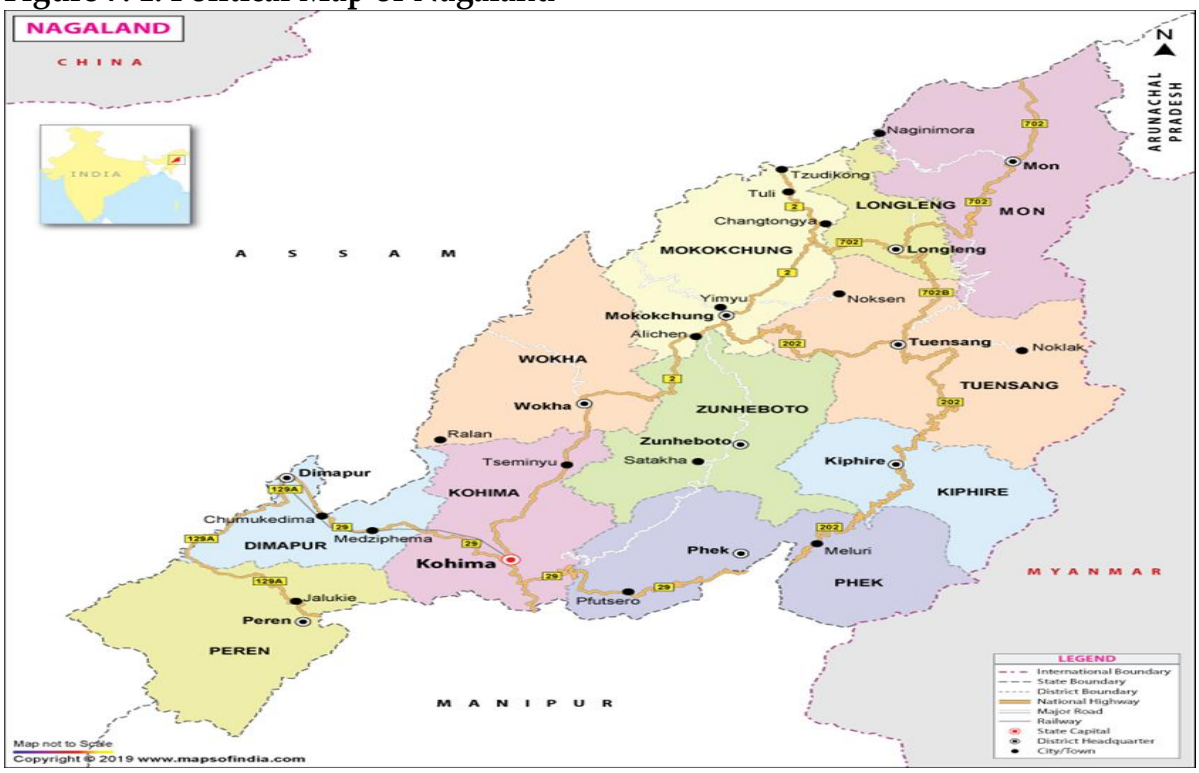
Meghalaya is a state where senior officials were fully convinced about the need to strengthen the PH function but were not sure whether the cadre is the best way.

However, they were also convinced that the entire health department and even the government needs an understanding of PH issues and respond accordingly. The state has taken reducing MMR as an important goal that they have been monitoring on a weekly basis with the senior district administrators. The state is also willing to experiment with the issue of PH cadre is some innovative suggestions with high potential are made.

## 7. Nagaland

Nagaland is surrounded by the Indian states of Manipur in the south, Assam in the north and the west, and Arunachal Pradesh in the north-east; it also shares an international border with Myanmar on the East. Topographically, the state is mountainous, and the altitude goes up to 3,000 m above sea level. Many of the villages are situated on the hill tops and at a higher elevation because of security reasons. About 86% of the population belongs to ST, which are further divided into several sub-tribes having their own distinctive languages and cultures. Nagaland is also a very rural state with close to 71% of the population living in rural areas. The villages are usually divided into *khels*, or quarters, each with its own head and administration. There are a total of 12 districts in Nagaland and one among them, Kiphrie, has been identified as an aspirational district by NITI Aayog. Seven per cent of households in Nagaland have Hindu household heads, only 1% of households have Muslim household heads, and 92% have Christian household heads. The sex ratio of the total population (females per 1,000 males) was 1,007 in 2019-20 with 92% men and 83% women being literate(Meghalaya Health & Family Welfare Department, 2021) (NFHS-5). The state falls under the seismic zone 5 and is at high damage risk from earthquakes. It is also prone to floods and landslides.

**Figure 7. 1. Political Map of Nagaland**



## 7.1. Financial status

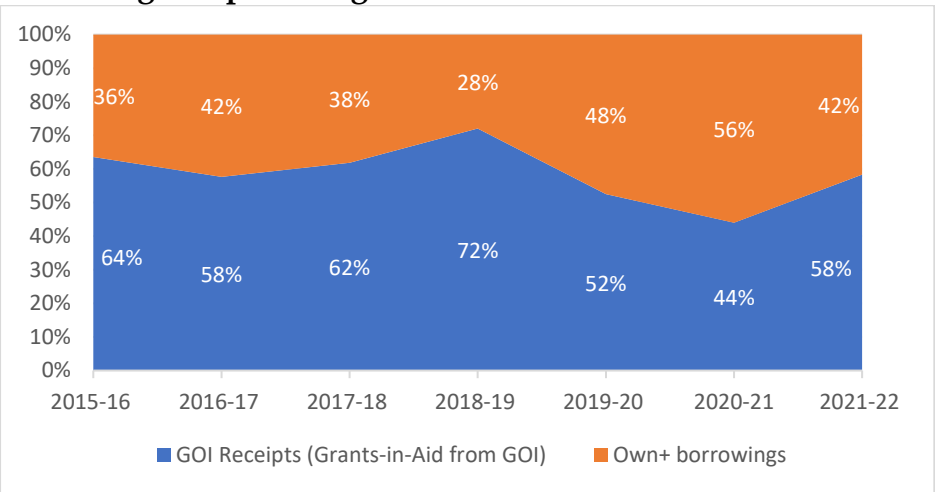
Despite the own revenues growing at an AAGR of 15% between 2015-16 to 2021-22, Nagaland's economic growth rate was negative in 2020-21 (Table 7.1). The share of taxes from GoI declined owing to decrease in transfers in absolute terms during 2019-20 and 2020-21, while the annual average growth for the period 2015-16 to 2021-22 remained at 8%. Grant-in-aid has grown at an AAGR of 12% recording a moderate growth, while borrowings have grown at an annual average growth rate of 32%, which is the highest among the revenue components of the state.

**Table 7.1. Components of revenue (INR in Crore) and its growth over years (in percentage)**

| Revenue | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|---|---|
| **Own Revenue** | 681 | 854 | 1,027 | 1,102 | 1,298 | 1,197 | 1,553 |
| **Share of Taxes** | 2,541 | 3,033 | 3,353 | 3,792 | 3,267 | 3,151 | 3,787 |
| **Grant in Aid from GoI** | 4,819 | 5,553 | 6,639 | 6,543 | 6,859 | 6,892 | 9,317 |
| **Non debt capital receipts** | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| **Borrowings** | 3,546 | 5,444 | 5,141 | 2,907 | 7,870 | 11,588 | 7,793 |
| **Total Receipts** | 11,587 | 14,885 | 16,161 | 14,346 | 19,294 | 22,830 | 22,452 |
| | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** | **2021-22** | **Average** |
| **Own Revenue** | 25% | 20% | 7% | 18% | -8% | 30% | 15% |
| **Share of Taxes** | 19% | 11% | 13% | -14% | -4% | 20% | 8% |
| **Grant in Aid from GoI** | 15% | 20% | -1% | 5% | 0% | 35% | 12% |
| **Non debt capital receipts** | 118% | 0% | -1% | 1% | 0% | 39% | 26% |
| **Borrowings** | 54% | -6% | -43% | 171% | 47% | -33% | 32% |
| **Total Receipts** | 28% | 9% | -11% | 34% | 18% | -2% | 13% |

The transfers from the GoI (tax devolution and grant-in-aid) make up about 59% of the receipts, while the own revenues and borrowings together account for 41% (Figure 7.2) for the period 2015-16 to 2021-22. The total liabilities estimated for the year 2021-22 stood at 42% of GSDP or 101% of the revenue receipts.

**Figure 7. 2.Share of Government of India transfers and Own revenue + borrowings (in percentage)**



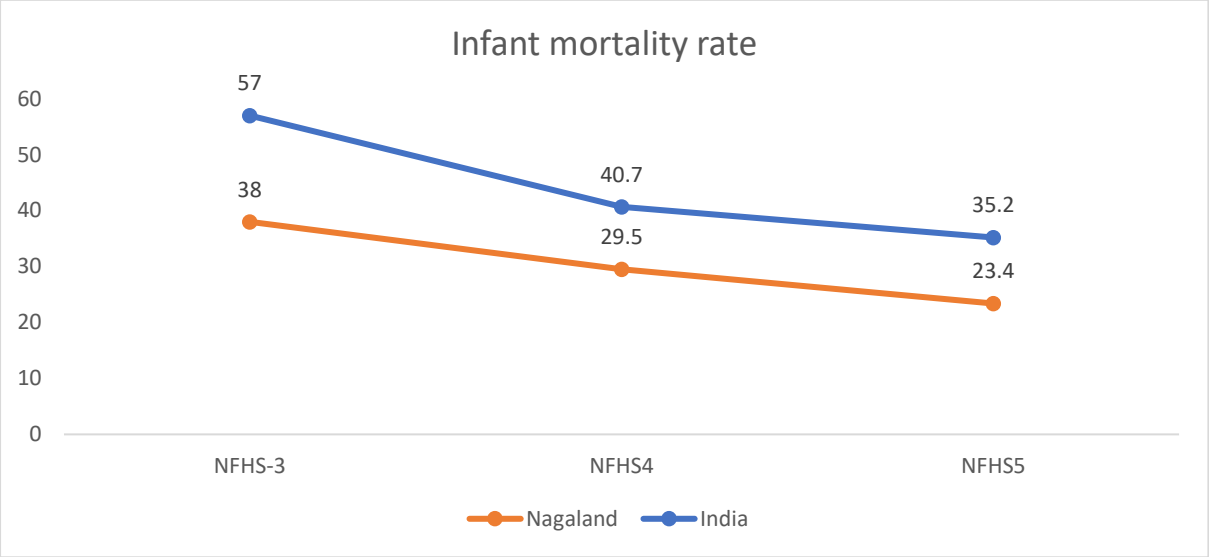

## 7.2. Health status

Public expenditure on health care in Nagaland is one of the highest in the country. In 2015-16, the per capita annual public expenditure on health in Nagaland amounted to INR 2,450 with an estimated PH spending at 2.97% of the total state GDP, which is significantly higher than the national average of INR 1,112 and 1.02%, respectively (Central Bureau of Health Intelligence, 2018). However, the same cannot be id in terms of PH outcomes of the state though some improvements have taken place over the years. The major PH related issues in Nagaland are related to MCH, CDs, and NCDs.

### 7.2.1. Maternal and Child Health

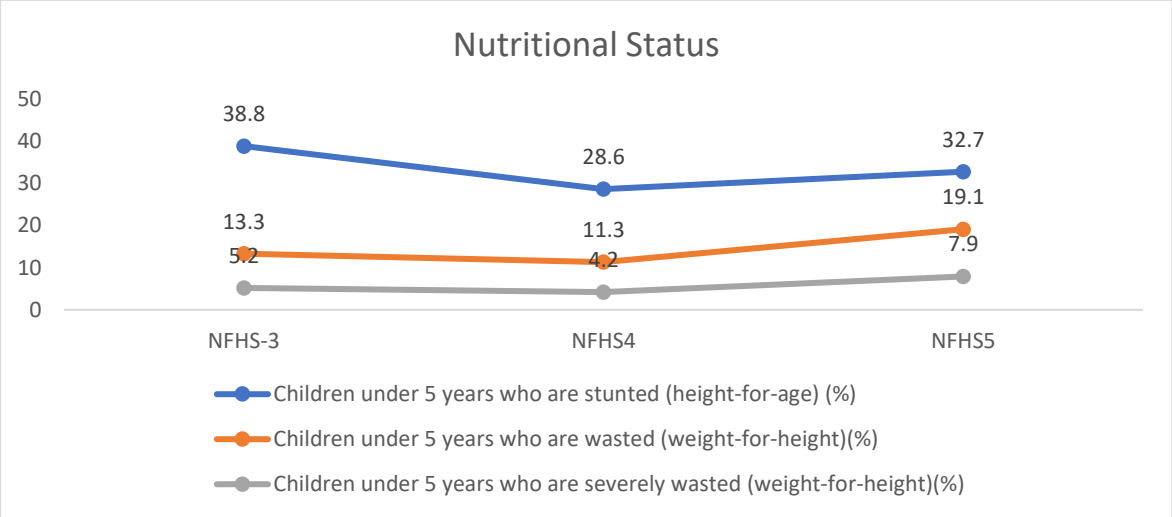
Statistics from NFHS-3, NFHS-4, and NFHS-5 show that the state consistently performed better than the national average in the infant mortality rate, which has been declining since 2005-2006 (Figure 7). A 2016 report by ICMR on disease burden in states showed that the largest causes of deaths (37%) in children aged 0 to 14 years in the state were due to diarrhoea and lower respiratory tract infections, followed by deaths due to neonatal disorders (32%). The state has seen huge improvements in the number of institutional deliveries from just 11.6% in 2005-06 to 45.7%in 2019-20, with the percentage of mothers having at least 4 antenatal visits also steadily increasing from 12.1% to 20.7% during the same time period. The percentage of fully vaccinated children aged 12–23 months also increased from 21% in 2005-06 to 57.9% in 2019-20.

**Figure 7.3. Infant mortality rate per 1,000 live births from 2005-06 to 2019-20**




However, the average in Nagaland continues to be lower than the national average on three major health indicators proportion of children who are stunted (height-for-age), wasted (weight-for-height), and severely wasted (weight-for-height). In terms of nutritional status of children under 5 years (Figure 7.4), the surveyed result shows a non-uniform pattern over the years. All the three vital indicators of nutritional status among children under 5 years of age declined in 2015-16 when compared to 2005-06, but they increased slightly in 2019-20.

**Figure 7.4. Nutritional Status of children under 5 years of age in 2005-06, 2015-16 and 2019-20**



Humtsoe and Soundari's (2019) examination of MHC practices among the Lotha tribal women (aged15-45 years) of Wokha district, Nagaland found that the utilization of MHC services was comparatively lower than the state level estimates. Although around 77.8% of the sampled women received at least one antenatal care, only about a quarter of them had delivered their child at an institution and received post-natal care services. The study also revealed that the non-availability of health care facilities or functional health care facilities in the vicinity, low cost of childbirth at home, and poor transport services were some of the main reasons for low utilization of MHC services in the district.

A World Bank (2019) study of 55 villages (who participated in the Nagaland Health Project)[10] across all the districts of Nagaland on MCH and nutrition services highlighted a strong preference for home delivery, which was attributable to geographic access, apprehensions about quality of care at healthcare facilities, particularly fear of surgical malpractices during a delivery, and the comfort of delivering within the community in the presence of family members. Interestingly, Longvah et al. (2017) in their study of the Chakesang tribal community residing in twenty villages of Phek district in Nagaland found that there was a much lower prevalence of malnutrition, anaemia, and vitamin A deficiency among their children when compared to both state and national level averages. They highlighted that the ease of access and consumption of agro-biodiverse and wild foods by the Chakesang tribe was one of the factors for their better nutritional and health outcomes compared to the rest of the country.

### 7.2.2. Communicable and non-communicable diseases

The report on the disease burden in Indian states showed that Nagaland's ETL dropped from 1.52 in 1990 to 0.47 in 2016. The DALYs due to CDS, and maternal, neonatal, and nutritional diseases was lesser than NCDs. The proportion of total disease burden in 2016 from communicable, maternal, neonatal, and nutritional diseases was 32.2%, 57.2% from NCDs, and 10.6% was due to injuries. The death rates due to stomach cancer and intestinal infectious diseases in Nagaland are on the rise and higher than the national

[10] The Nagaland Health Project (NHP) is a project supported by the World Bank that aims to improve management and delivery of health services and increase their utilization by communities in targeted locations in Nagaland without duplicating existing government programmes.

average. While diarrhoea, lower respiratory infections, and TB were the leading cause of DALYs in the 90's, they were replaced by NCDs such as ischemic heart disease and stroke in 2016.

According to data available from the National Vector Borne Disease Program, CDs such as malaria, Japanese encephalitis, and dengue are endemic in Nagaland, and the number of cases over the years have declined gradually. In Nagaland, Yadav (2019) found that while the prevalence rate of CDs had declined by half, the prevalence rate of NCDs had doubled between 1996 and 2014. However, Gupta and Xavier's (2018) study using NFHS-4 data shows a prevalence rate of hypertension at 23%, 16%, and 20% among men, women, and the total population, respectively—this is one of the highest among the states of India. A study by Tushi et al. (2018) reported that the increasing use of tobacco and alcohol consumption were the two major risk factors for NCDs in the rural population of Mokokchung district in Nagaland.

### 7.2.3. Public health disasters

Nagaland is vulnerable to all kind of natural disasters such as earthquakes, flash floods, landslides, and forest fires owing to its geo-climatic, geological, and physical features. The impact of natural disasters increases with increase in population growth, expansion of settlements in hazardous environment and inadequate infrastructure. The severity of natural disaster in the state has been increasing over the years and continues to claim lives apart from damaging properties and livelihoods of the people (Jamir & Khan, 2018).

### 7.2.4. Health care service delivery in Nagaland

The delivery of health care services in Nagaland is through a network of state run SCs, PHCs, CHCs, and DHs. Table 7.4 shows that Nagaland is comparatively in a much better position with an excess number of SCs, PHCs, and CHCs than what is required for the state's population. However, Nagaland is the only state in India without a medical college. While two medical colleges have been approved for construction, in Kohima and in Mon, there is no clarity yet on when they will become functional.

Lack of medical colleges in the state has also led to a shortfall in human resources and only 10 of specialist posts (namely, OB/GYNs, paediatricians,

surgeons, and physicians) have been filled in CHCs that typically serve as first referral units. Almost 100% of the sampled population had their ailments treated on medical advice provided by healthcare service providers working in either a government or an non-governmental organisation-run/charitable hospital (NSS, 2018)(NSS 75th round, 2018-19).

**Table 7. 2.Number of health facilities in Nagaland 2019-20**

| Type of facility | Number of facilities Present | Required | Shortfall |
|---|---|---|---|
| **Subcentres** | 433 | 414 | -4.6% |
| **Primary Health Centres** | 126 | 62 | -103.2% |
| **Community Health Centres** | 21 | 15 | -40% |
| **Sub divisional/district Hospital** | 0 | | |
| **District hospitals** | 11 | | |
| **Government Medical colleges** | 0 | | |
| | | | |

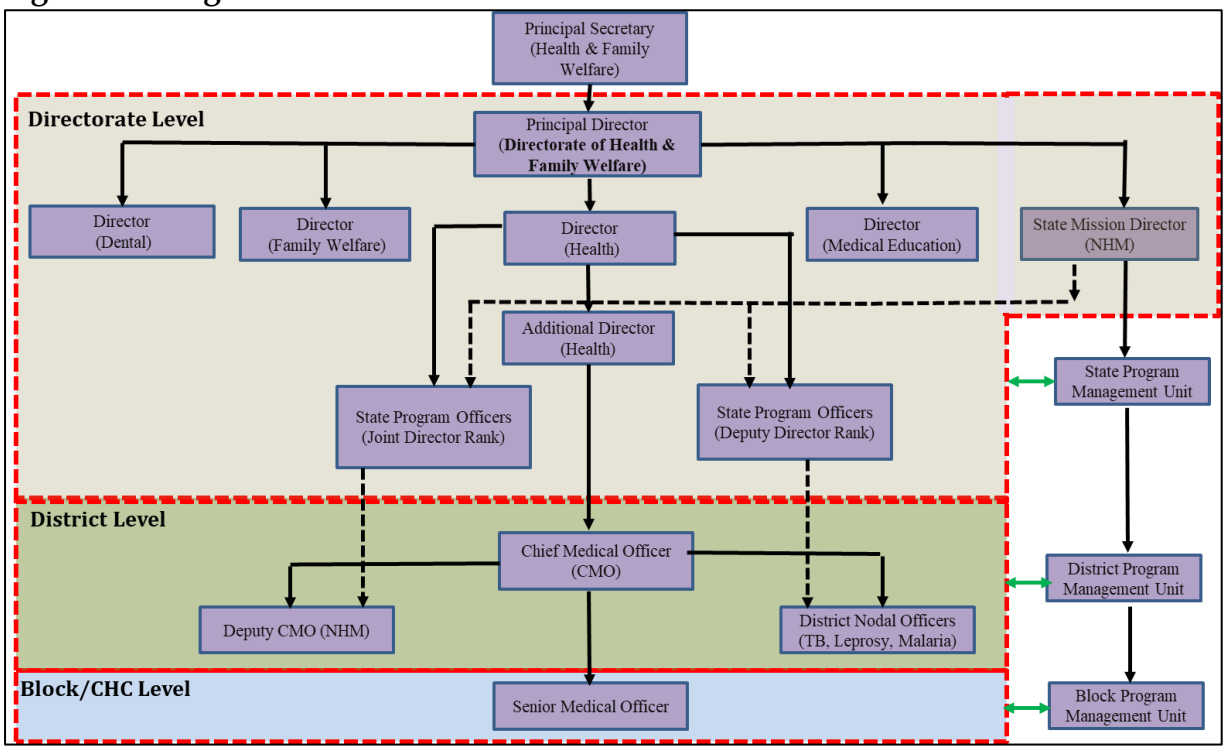
Source: * Rural Health Statistics, 2019

## 7.3. Nagaland: Public Health Governance Structure

The principal secretary leads the DoHFW, but unlike in many other states of India, Nagaland has only one directorate, Directorate of Health and Family Welfare. This directorate is headed by a principal director, and they acts as the connecting link between the directorate and the state government. Under the principal director, there are four directors, one each for health services, family welfare, dental services, and medical education. The mission director of NHM is also a doctor from the health service cadre (not from the IAS cadre, unlike other three states) and reports to the principal director. This single directorate is responsible for both family welfare related activities/programmes such as immunization, family planning, maternal & child health along with health services such as disease surveillance, implementation of PH programmes (TB, leprosy, and malaria) and management of healthcare facilities such as DHs, CHCs, and PHCs. The SPMU supports the directorate in regard to management, planning, financing, and monitoring and evaluation of PH programmes funded by the NHM. The SPMU has key positions such as the

state programme manager, state finance manager, state accounts manager and state IEC officer.

**Figure 7. 5.Nagaland's Public Health Governance Structure**




The directorate also has 5 additional directors, 11 joint directors, and 13 deputy directors. They assist the four directors in the administration of all the government health facilities and also act as programme officers for implementing national PH programmes in the state. Apart from these, they are also responsible for other key functions such as procurement, store/supply chain, quality assurance, disaster management, road safety, planning & coordination, training and medical education. The administrative head of the health department in the district is the CMO, who is responsible not only for the implementation of PH programmes but also managing all the health facilities within the district. Apart from the district nodal officers (such as district tuberculosis officers, district vector borne control officer, and a district immunization officer), the medical superintendent of the DH also reports to the CMO, who is also the focal for driving intersectoral collaboration with other line departments at the district level, especially PHED, disaster management, and women and child development.

Except in emergencies or in health camps, the CMO does not have any clinical duties. Under the CMO, there is a position of a deputy CMO who assists the CMO in the administration of various health units in its jurisdiction and also serves as a nodal officer for a few NHM programmes. In a few district offices, there are also MOs working as district programme officers for managing other smaller programmes. The CMO also oversees the functioning of the DPMU. The key role of the DPMU (comprising of the district programme manager, district finance manager and district data manager) is to support the district health administration in the successful implementation of NHM programmes. In a DH, while the specialists (both senior and junior grade) are primarily responsible for individual patient care, they also support PH programmes by reporting data such as number of pregnant women, institutional deliveries, tests conducted for Human Immunodeficiency Virus, Hepatitis B, or COVID-19. At the block level, a senior MO is in charge of managing a CHC along with the implementation of NHM programmes. The block program manager (appointed by the NHM) supports the senior MO in the implementation of all PH programmes. The MOs who work at the CHC report to the senior MO; they are mainly responsible for individual patient care but also support in the implementation of PH programmes.

### 7.4. Nagaland: Health Service Cadre & PH Leadership Workforce

Till 2006, Nagaland had two separate directorates along with two separate cadres, directorate (medical services), which comprised of medical specialists, and DHS, which comprised of non-specialists/generalists (only MBBS graduates). All PH programmes were managed by the DHS. In 2006, the two directorates were amalgamated into a single directorate with an aim to improve the health care delivery system by bridging the gap between the two cadres. This led to the formation of a single health service cadre and currently the total sanctioned cadre strength is 54,811. However, only seven out of these 548 doctors (MBBS/Bachelor of Dental Surgery) have a specialisation in PH/community medicine (six of whom are posted in the Directorate itself). There are a total of six grades in the cadre: super selection, special selection, higher selection, selection, senior, and junior grade. Table 3 shows the structure of the Nagaland health service cadre.

[11] Data provided by the directorate and as on 31 October, 2020.

**Table 7. 3.Structure of the Nagaland Health Service Cadre**

| Grade | Designation | Total Number of Sanctioned Posts |
|---|---|---|
| **Super Selection** | Principal Director | 1 |
| **Special Selection** | Director | 4 |
| **Higher Selection** | Additional Director | 5 |
| **Selection** | Joint Director, Consultants, Chief Medical Officer, Medical Superintendent | 52 |
| **Senior** | Deputy Director, District Programme Officer, Senior Specialist and Senior Medical Officer | 179 |
| **Junior** | Junior Specialist and Medical Officer | 307 |
| **Total** | | 548 |

The minimum qualification for direct recruitment is a MBBS/Bachelor of Dental Surgery or equivalent degree from a recognised university under either the Medical Council of India or the Dental Council of India. The various posts in the cadre are filled by promotion from the confirmed members of the health service who have rendered a specified number of years of service in the immediate lower grade and have also fulfilled the mandatory roster posting as specified in the Transfer and Posting Policy. As per the Transfer and Posting Policy (2018), all health facilities have been categorised as A, B, and C (with C category being the most remote). To be eligible for a promotion, depending upon the grade, doctors need to have served a specified number of years in categories B and C. Apart from this, there are no eligibility criteria specified in

terms of either qualification or training for any of the PH related posts in the cadre (CMOs, district nodal officers, senior MO etc.). The DSO we interviewed had specialised in pharmacology, while the deputy director (planning) has specialised in physiology. However, a clinical specialisation (post graduate degree/diploma) is an eligibility criterion for posts such as junior or senior specialists who are usually posted in CHC's and district hospitals. It is important to note that the grade is the same for a MO and a junior specialist or senior MO and a senior specialist.

As of September 2021, all the key PH positions such as CMO, deputy CMO and all state/district nodal officers had been staffed with the only exception being the zonal leprosy officer, wherein 5 out of the 11 positions were still lying vacant. The directorate was unable to provide us with additional details such as academic qualifications, gender, and type of post (permanent or contractual) of the incumbents of all the key PH administrative positions.

Upon induction to the cadre, MOs are oriented on the various national health programmes being implemented in the state. They are also attached to a DH under the supervision of the medical superintendent/CMO to gain experience in providing individual patient care for a period of three to six months. Apart from this, no other PH related training on subjects such as epidemiology, biostatistics or health financing is being provided by the health department.

## 7.5. Nagaland: Essential Public Health Functions

To understand the status and implementation of the EPHF, we interviewed a few health officials at the district level.[12] Unfortunately, these interviews were not sufficient to provide us with a comprehensive picture of the EPHF. Table 7.4 is an attempt to stitch together all the pieces of information provided by these officials with regard to the EPHF. Their inputs have not been validated with any other secondary data or government documents.

**Table 7.4. Status of Essential Public Health Functions (EPHF) in Nagaland**

| EPHF | Status | Remarks |
|---|---|---|

[12] They included the CMO, deputy CMO, and district nodal officers such as the DIO, DSO and DTO of Kohima district.

| | | |
|---|---|---|
| Health Situation Monitoring & Analysis | | • The district programme officers along with partnership agency (United Nations Development Programme), chief medical officer (CMO), and deputy CMO ascertain if the data can be used for analysis.<br>• There is a Lack of adequate frontline workers to regularly collect data on the population's health status. |
| Epidemiological Surveillance/Disease Prevention and Control | | • The Integrated Disease Surveillance Programme (IDSP) unit at the district level is functioning well to identify and monitor the levels of various diseases.<br>• There is a need to improve coordination with local communities. However, transportation and road network is very poor to access remote locations. |
| Research & Development on Public Health | | • The state does not have a public health (PH) research agenda. |
| Policy and Planning | | • Policy and Planning in relation to PH is largely driven by the National Health Mission (NHM) and, hence, it is highly centralised. |
| Budgeting and Financial Management | | • Public health is entirely supported by NHM.<br>• The proposed budget is never fully approved. Whatever gets approved too is released very late. The delay in release of funds leads to under-utilization, but the percentage of funds utilized has a bearing on next year's allocation. So, it has become a vicious cycle. |
| Health Promotion and Education | | • The involvement and support of the church, church-affiliated organisations and women's organisations has been very good in creating awareness.<br>• One of the key challenges for health promotion is accessibility to remote areas. Transportation facilities and road network is very poor. |
| Reducing the impact of emergencies and disasters on Health | | • A rapid response team has been constituted in each district to respond to any outbreak or health disasters.<br>• There is a need for a better trained workforce and equipment to handle emergencies. |
| Regulation and Enforcement of Public Health | | • In terms of regulation, the main focus is on enforcing the Nagaland Healthcare Establishments Act, which looks at setting up and operations of private hospitals, nursing homes, and clinics. |

| | | |
|---|---|---|
| | | • Apart from food safety, health department is not involvement in any enforcement of regulations related to water, sanitation and waste. |
| Assuring a Competent Public Health Workforce | | • Most of the training is confined to programme specific requirements. |
| Ensuring Quality of Population-Based Health Services | | • No Response |
| Environmental health and Sanitation | | • The health department does not play an active role in this domain. Public Health Engineering Department, local bodies, and the Pollution Control Board play a bigger role. |

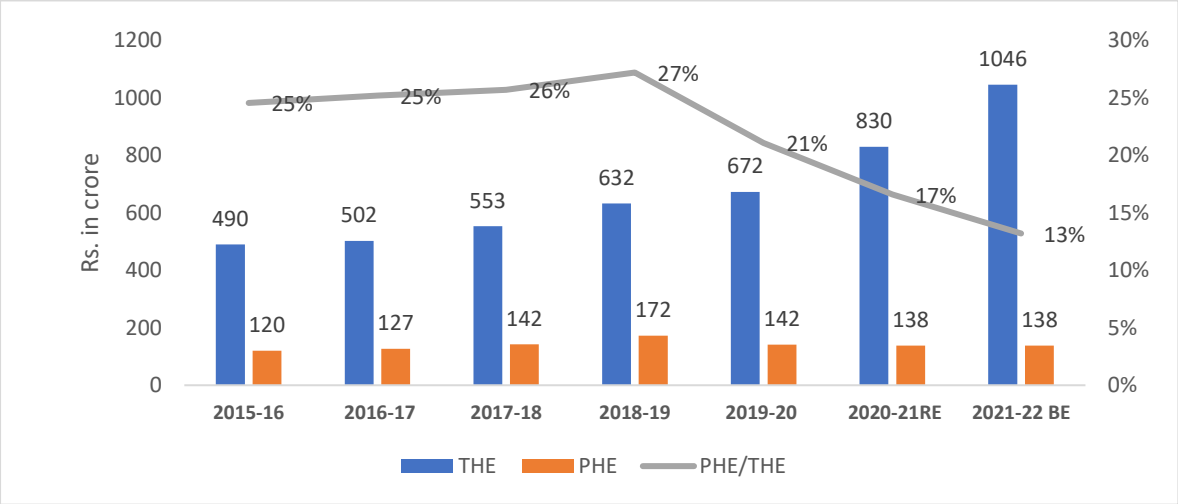
Note: Green colour denotes that the function is fairly defined and operational in the state. Orange colour denotes that the function is not well defined but operational to some extent in the state. Red denotes that this function is carried out poorly or not the responsibility of the health department.

According to the officials we interviewed, two important PH functions—population health monitoring and epidemiological surveillance—were well established in the state despite challenges such as difficult terrain and poor transportation facilities. As was observed in the other NE states, PH functions such as policy and planning as well as budgeting and financing were completely managed by the state level officials and the district health administration was only confined to its execution. Intersectoral collaboration between the health department and other bodies such as local governments, pollution control board, and PHED needs to be further strengthened so that they can play an active role in enforcing laws that protect environmental health and sanitation.

## 7.6. Analysis of Public Health Expenditure

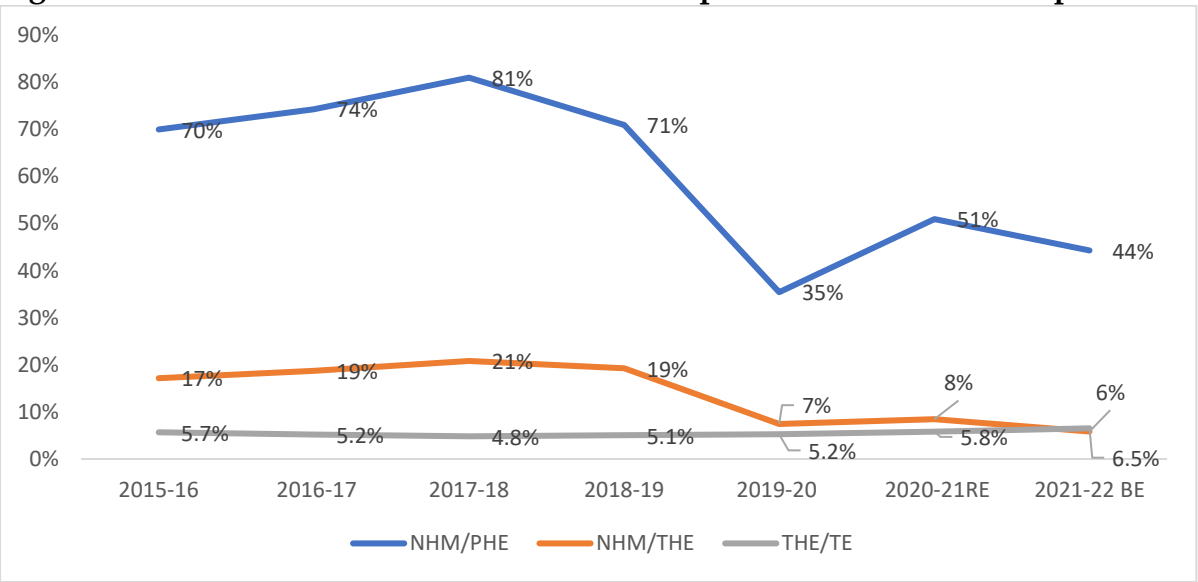
Nagaland state's total health expenditures have grown at an AAGR of 14% over the period 2015-16 to 2021-22, while the PH expenditure of the state has grown at AAGR of 3% and that of the NHM expenditures at 1% for the same period. The share of PH expenditure in THE has averaged at 22% for the period 2015-16 to 2021-22 and has decreased from 27% in 2018-19 to 13% in 2021-22 (Figure 7.6).

**Figure 7.6. Total Health Expenditure and Public Health Expenditure over years (INR in crore)**




The share of NHM expenditures in the PH expenditure and THE serves as a proxy of the share of GoI in the state health expenditure because of its share of 90% in CSS. The share of NHM in THE has decreased from 21% in 2017-18 to 6% in 2021-22 (Figure 7.7). The share of NHM in the PH expenditure has averaged at 61% over the period 2015-16 to 2021-22. The share of health expenditure in the total expenditure of state had decreased to 4.8% in 2017-18 and has been improving since to reach 6.5%in 2021-22.

**Figure 7. 7. Share of National Health Mission expenditure and Health expenditure**




Note: NHM is National Health Mission, PHE is Public Health Expenditure, THE is Total Health Expenditure, and TE is Total Expenditure.

## 7.7. Public Health Cadre Formation: Insights & Takeaways

### Challenges of ensuring parity across different cadres

Through the interviews, we collected some interesting perspectives by reflecting on the history of Nagaland state's health department. In 1992, the DoHFW was bifurcated into DHS and Directorate of Medical Services. This also led to the formation of two separate cadres, where doctors having only an MBBS degree were part of the generalist cadre and would work in the DHS and doctors who had a specialisation/post-graduate degree were part of the specialists cadre and would work in the Directorate of Medical Services. Two separate and distinctive channels of seniority were established too, so that at any given point in time there would be one director from each cadre. The option to change the cadre was allowed only in the case of a generalist doctor becoming a specialist after acquiring a post graduate degree/diploma.

The administration of all centrally sponsored PH programmes, including family welfare, was the responsibility of the DHS. However, the formation of two separate cadres within the health department led to several issues. Two doctors' associations, one representing generalist doctors and the other comprising of specialists started warring over inconsistences in promotion and career progression—this crippled the state's health care delivery system many a times. It also led to several petitions being filed in the high court, one among them being the appointment of doctors from the specialist cadre to the position of programme officers in the AIDS and blood safety centrally sponsored programmes.(High Court of Gauhati, 1994) The crux of the issue was that while this scope of work came under the DHS (as per the cadre rules) and provided doctors belonging to the generalist cadre with promotional avenues, it was being usurped by the specialist cadre on the grounds that such programmes need to be managed by experts who have adequate training in the subject.

Finally, in 2006, the two directorates were once again merged into a single DoHFW. This also resulted in drastic changes to the state's health service rules especially with regard to posting, promotions, and seniority. The additional director also informed us that after the merger of these two cadres, the specialists were being paid an extra 'specialist' allowance (apart from the non-

practicing allowance given to all doctors). While he believes that having a dedicated PH cadre is a good idea, he doesn't feel the need for having a separate directorate for PH. Instead, he recommends that a director, exclusively for PH, can be appointed who reports to the principal director (similar to the recently created director post for dental services). He also cautioned that the rules for the PH cadre need to be carefully drafted to ensure that there is parity and similar promotional avenues when compared with other cadres in the health department.

A few officials pointed out that there was dual reporting of data in NHM programmes due to the involvement of both the state health department officials and the NHM appointed staff. They felt that the creation of a PH cadre could also help in establishing a single chain of command/reporting of data.

### Acute shortage of medical professionals

A challenge that was highlighted by almost all the senior health officials we spoke to was the acute shortage of doctors/generalists, let alone specialists trained in PH. Nagaland has one of the worst statistics when it comes to the doctor-population ratio. Against a WHO recommended 1 doctor for every 1,000 people, the state's doctor-population stands at 0.58 every 1,000 people or roughly 1 doctor for every 2,000 people. The national average stands at 1.34 every 1,000 people. The state ratio is inclusive of private practitioners registered with the Nagaland Medical Council (Walling, 2020). 'How can we create a dedicated PH cadre when there is such an acute shortage of doctors?' was the question on most senior health official's mind. A senior officer in the secretariat expressed that in a state having only about 500 odd government doctors, managing clinical services, health facilities, and PH programmes is extremely challenging and requires a great deal of multi-tasking. Hence, doctors can't be confined only to clinical or PH roles. The situation becomes even more bleak when one takes into account the fact that most doctors are required to work in very remote and difficult terrains of the state. An official at the directorate recollected that recently when the health department advertised for recruitment of doctors under the NHM program, only a handful applied as many did not want to work in remote places and preferred working in a private hospital even if it meant working in another state.

### Including non-medical professionals in PH Cadre

One can argue here that this would make a strong case for including non-MBBS professionals who are trained in PH into the PH cadre. While senior officials were open to this idea, they also felt that the entry level positions and career progression for MBBS and non-MBBS professionals (both with a PH specialisation) cannot be the same. An official remarked, 'The efforts involved in traversing the path of MBBS with MPH is not the same as a non-MBBS with MPH; hence, it would be unfair to compare them using the same yardstick'. They felt that even if non-MBBS professionals had a PH qualification, they would not be suitable for roles such as CMO or senior MO since that requires managing health facilities/doctors or even as district nodal officers since that too occasionally requires them to treat patients (e.g., leprosy, malaria, and TB).

### Clinical specialists occupying key PH positions

A senior official qualified in PH opined that very often PH related positions such as senior MO, CMO or district officers are held by clinical specialists who neither have the qualification nor interest towards administration or programme management. He felt that the main reason behind this is the belief at the top that these roles can be discharged by any doctor and does not require any specialised PH qualification or training. He remarked, 'If I go to a hospital for an illness, then I do not question the wisdom of a clinician who is diagnosing me. The same respect should be given by clinicians to a PH specialist'. In addition, by assigning these PH posts to clinical specialists, CHCs and DHs are being deprived of them as well. A senior specialist in a DH in Kohima put it as 'if you want to be in administration, then why waste 3 more years in acquiring a clinical specialisation'. He believes that the only specialists who are interested in taking up administrative roles should be assigned these postings after they have completed a foundation training on PH /community medicine. Many of the clinical specialists find the transfer and posting policy irrational and give up their clinical practice so that they can take up administrative/programme management positions in Kohima.

### Importance of PH training and its implementation

Officials who are in charge of planning, coordination, and programme management definitely see the value of a PH training. A district immunization officer we spoke to had specialised in forensic medicine and he acknowledged

that a formal training in PH would definitely help him in discharging his role more effectively. However, an official responsible for planning and training was of the opinion that any foundation course on PH needs to be at least 6–12 months long for it to be comprehensive and effective. But considering the severe shortage of doctors that Nagaland is facing, providing such a long study leave for doctors in service would severely impact programme implementation. Currently, only programme specific trainings (example: on oral health and sanitation) are being provided to doctors in PH roles.

### Impact of PH Cadre on the career progression of clinical specialists

The creation of a dedicated PH cadre would also mean a creation of a separate cadre for medical/clinical specialists who are responsible for individual patient care. While most officials believe that this bifurcation of the cadre is a good idea, a few of them also raised questions regarding the career progression of medical/clinical specialists in such a scenario. Senior positions such as additional director, director, and principal director are predominantly PH roles. If the new cadre rules specify PH qualification or formal training as an eligibility criterion for these roles, then most medical/clinical specialists would be denied these promotional avenues. Clinicians will then be able to grow only up to the role of a consultant, which is at the joint director level. However, one of the directors strongly argued that in a state like Nagaland where skilled workforce is not easily available, the only option is learning on the job. According to him, any clinical specialist who has risen to a senior administrative position in the directorate would have already gained considerable PH experience by being earlier in posts such as CMO/district nodal officer/senior MO. On a lighter note, he added, 'I have an MD degree and at the beginning I didn't even know where to sign on a file, but pretty soon I figured things out by learning on the job'.

### Focus on Curative health care instead of preventive health care

One of the senior officials with a PH specialisation shared a very broad perspective on the status of PH in Nagaland. He said that there are two sides to any health care system: preventive and curative. But it is the curative side that usually gets more prominence from elected representatives as its activities are immediately visible to the general public, such as the construction of a super specialty hospital. On the other hand, the preventive side involves

activities such as disease surveillance, creating awareness, and driving behavioural change on the ground, which go unnoticed as they are invisible in a way. In preventive health care, it often takes time for the efforts to bear fruit. Preventive health care typically requires a multi-pronged approach and the involvement of various other departments such as social welfare, transport, women and child-development, thus adding to the complexity. While the COVID-19 pandemic has brought attention to preventive health care and PH along with discussions regarding creating a PH cadre, a sustained investment in PH programmes/initiatives needs to be also made for the PH cadre to be effective.

The current reality was succinctly summed up by a senior IAS officer working in the secretariat, 'While a PH cadre is desirable, a small state such as Nagaland may not be able to afford it especially if it results in the creation of new posts, for two reasons: resource constraints and fight of turfs in government machinery'.

# 8. Conclusions and Way Forward

## 8.1. Creation of a Public Health Cadre in four NE States: Points to Ponder

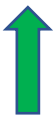
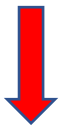
There are several factors that need to be carefully evaluated before embarking on the journey of creating a dedicated PH cadre. Foremost among them is to understand the desirability for having a cadre, followed by what cadre structure would be most effective for the state. Then comes identifying a talent pipeline along with training requirements and, last but not the least, the financial resources to support cadre formation. The states in NER are very unique when compared to other Indian states in terms of challenging terrains, long international borders, and low revenue generating capacity, thus leading to an increased dependency on support from the centre. Many of their governance decisions are led by the centre's directive. However, the decision to form a dedicated PH cadre should take into account local factors and ground realities of this region.

The table below summarises the pros and cons or enablers and disablers towards the creation of a PH cadre in the four NE states that we focussed in our study, under the five distinct themes of – i) desirability, ii) cadre structure, iii) talent pipeline, iv) training, and v) financial resources. This table serves as a ready reckoner for key stakeholders from these four NE states who would be involved in formulating a pathway for creating a PH cadre for their respective states. The decision about PH cadre is ultimately a political economic decision that needs to consider the issue of desirability and feasibility from various perspectives.

**Table 8.1. Enablers and Disablers in creating a Public Health Cadre**

| **DESIRABILITY** | |
|---|---|
| ↑ | ↓ |
| • A public health (PH) cadre can help in extending the government's focus beyond just hospital-based healthcare to also address the social determinants of health, health promotion, and community health. | • Creation of a dedicated PH cadre can lead to the gap between PH and clinical services being widened. It will further promote working in |

| | |
|---|---|
| • A majority of PH positions are being held by clinical specialists who aren't qualified/adequately trained in PH. Hence, they tend to focus only on curative/clinical side and ignore preventive/public health. Creating a dedicated PH cadre will ensure that only trained professionals become eligible to occupy these positions.<br><br>• Creation of a dedicated PH cadre can provide a career pathway for the entirety of PH workforce (including Accredited Social Health Activists [ASHAs], district programme managers, and other contractual workers). If done so, it would ensure that individuals who are knowledgeable and experienced in PH issues manage the state's PH system and have parity in income and promotions.<br><br>• Essential public health functions such as research, policy planning and budgeting, regulation and enforcement in public health, environmental health, and sanitation will be given due importance by an administration that is qualified/trained in PH.<br><br>• National Health Mission (NHM) is an example of how health infrastructure and programme implementation can be improved by strengthening administrative capacity. Similarly, a dedicated PH cadre will further infuse administrative and managerial | silos and lack of collaboration between each other.<br><br>• There will be challenges in ensuring parity with regard to promotions and career progression between the clinical and PH cadre, both belonging to the same department. For example, in Nagaland, this had led to the two doctors' associations warring legally over this issue for decades and completely crippling the state's health system.<br><br>• Instead of creating a dedicated cadre, a rigorous PH orientation to the current health service cadre is the need of the hour. Only when a medical officer performs their dual role of curative and preventive care effectively, can a state's health issues be addressed in a comprehensive manner.<br><br>• For effective functioning of a separate PH cadre, support from PH consortium as well as financial support is a must. Both of these do not exist in the current scenario.<br><br>• The PH cadre is not a magic bullet that can alone revamp the PH system. There are larger issues to contend with. How many states even have a health policy in the first place? How much does the state prioritise PH (e.g., on disease |

| | |
|---|---|
| capacity to the state's health department. | surveillance, prevention, etc.) in its budget allocation? |
| **CADRE STRUCTURE** | |
|  |  |
| • Levels: Create an Indian Public Health Services (IPHS) cadre that is responsible for all PH functions starting at the block level and going up to the state and all the way till the national level. This cadre should be supported by a state PH cadre and could be akin to the civil services.<br><br>• Regional: Create a single regional cadre for a bunch of smaller neighbouring states, such as the North-East (NE) states except Assam. This will help in addressing the paucity of trained PH professionals in the region. Government of India (GoI) and North Eastern Council (NEC) will need to play an active role in implementing it.<br><br>• Entry Level: Clinical and PH specialists have very divergent thinking and approach to healthcare (curative versus preventive). Hence, the separation of clinical and PH positions should be made at the entry/Primary | • Creating a dedicated PH cadre will require a comprehensive overhaul of the cadre and recruitment rules at both state and national levels. Public health cadre needs to be state based because of the deep linkages that need to be established with local communities for it to be effective. However, there needs to be an organic link/career progression for the state PH cadre to the director general of health services in the health ministry, GoI. This will take years for it to be implemented.<br><br>• Health being a state subject, the seven NE states (except Assam) will need to come together and frame common cadre and recruitment rules, including posting and transfers across the states. This could be a challenge.<br><br>• Having a PH official from the PHC level will lead to almost doubling of the number of positions of the existing health service cadre. This |

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| Health Centre (PHC) level itself and then continue as parallel career paths at block, district, and state levels.<br><br>• Entry Location: A block is a good starting point for a PH cadre. A block public health officer qualified in PH can manage supervisors (at a cluster level), who, in turn, can manage the frontline PH workers. Similar to the Integrated Child Development Scheme's organisation structure.<br><br>• Career Progression: A PH cadre will help mandate PH-related qualifications/training as an eligibility criterion for the PH positions within the health department.<br><br>• Sub-cadres: The PH cadre structure should also provide promotional avenues for various professionals who are not medical doctors, such as 1) frontline workers (ASHA and auxiliary nurse midwives) 2) technical staff (such as epidemiologists and entomologists), and 3) programme management (including data and financial management).<br><br>• The creation of a PH cadre needs to go hand in hand with the creation of preferably a separate PH department (along with a secretariat) or at least a separate | will have huge financial implications.<br><br>• At the entry level, the cadre should gain experience in both clinical services and PH. This is because at the PHC level, primary healthcare and PH are highly interlinked.<br><br>• Creating a PH cadre can have an impact on the career progression of clinical specialists since most of the senior positions in the directorate are largely administrative in nature and will require PH qualification/training. |

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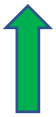
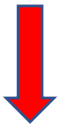
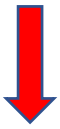
| directorate under the health department. This will ensure that there is accountability in the higher echelons of the state government. | |
| **TALENT PIPELINE** | |
|  |  |
| • <u>Qualifications</u>: To address the paucity of talent, apart from medical doctors, non-medical graduates coming from diverse backgrounds but with a post-graduate specialisation in PH and allied disciplines such as epidemiology, biostatistics, socio-behavioural science, health promotion, programme management, research methods, programme evaluation and health management information systems should also be considered.<br><br>• Programmes similar to the Bachelor of Community Health for the position of community health officer in Assam can be considered as a solution for providing necessary skilled workforce in these states. | • Many NE states are facing an acute shortage of doctors/generalists, let alone specialists trained in PH. A state such as Nagaland does not even have a single medical college.<br><br>• These multi-disciplinaries are highly valued, but it will require creating new positions in the health department/cadre. Many of the existing PH-related positions such as chief medical officers, senior medical officers, etc. also require clinical training and, hence, can only be performed by medical professionals. |
| **TRAINING** | |

|  |  |
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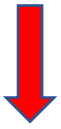
| • A foundation course on PH needs to be at least 6–12months long for it to be comprehensive and effective. Short term courses/programme based trainings give a very limited orientation.<br><br>• States can opt for collaborating with institutes that offer six months online certificate course/ PH training to train the existing health service cadre officials occupying various PH positions.<br><br>• A foundation course on PH can be planned for the recruited cadre officials prior to them reporting for their jobs.<br><br>• Training/skills upgradation in PH related disciplines should also be provided to frontline health workers and technical staff so that it can create opportunities for them to join the PH cadre. | • Considering the acute shortage of doctors, it is not feasible to either sanction study leave or give any time off from work for the officials can attend long term PH training. |
| **FINANCIAL RESOURCES** | |
|  |  |

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| • State governments need to evaluate if certain PH-related posts can be surrendered as they are no longer relevant to the existing disease burden of the state.<br><br>• GoI support (grant-in aid funding for NHM) if channelled through or tied to the PH cadre can pave the way for its smooth implementation in these states.<br><br>• The health expenditure, on an average, hovers around 7% of the state's expenditure, which is a good fraction, but it is also subject to the higher funding support by GoI.<br><br>• Training current employees in PH is one of the most cost-effective options while the state undertakes a long-term plan of setting up a PH cadre. | • State governments typically push back on incurring additional costs on personnel towards creating new posts and employment. Ensuring that an entire PH workforce is part of the cadre will be financially challenging for most states as this translates to a huge number of employees who will need to be provided with government social security benefits.<br><br>• The average share of own revenue (tax and non-tax together) for the period between 2015-16 and 2021-22 accounted for 27%, 8%, 19% and 6% for Assam, Manipur, Meghalaya, and Nagaland, respectively. This indicates a very heavy dependence on the GoI transfers in the form of both tax share and grant-in-aid.<br><br>• The transfers from GoI (tax devolution and grant-in-aid) are very critical for the states and account for 58%, 80%, 69% and 59% of total revenues for Assam, Manipur, Meghalaya, and Nagaland, respectively. This fiscal position inhibits state govts from making big ticket expenditures especially where GoI has a role. |

Source: Conceptualised by Centre for Budget and Policy Studies.

## 8.2. Recommended Pathway for States to Consider

One of the key conclusions from our study is that a PH cadre is not a magic bullet that can alone revamp the entire PH system. There are much larger issues to contend with, especially in terms of how a PH system is organised and governed. Thus, a PH cadre requires an enabling environment for it to create the desired impact. It is in this context, that we recommend a

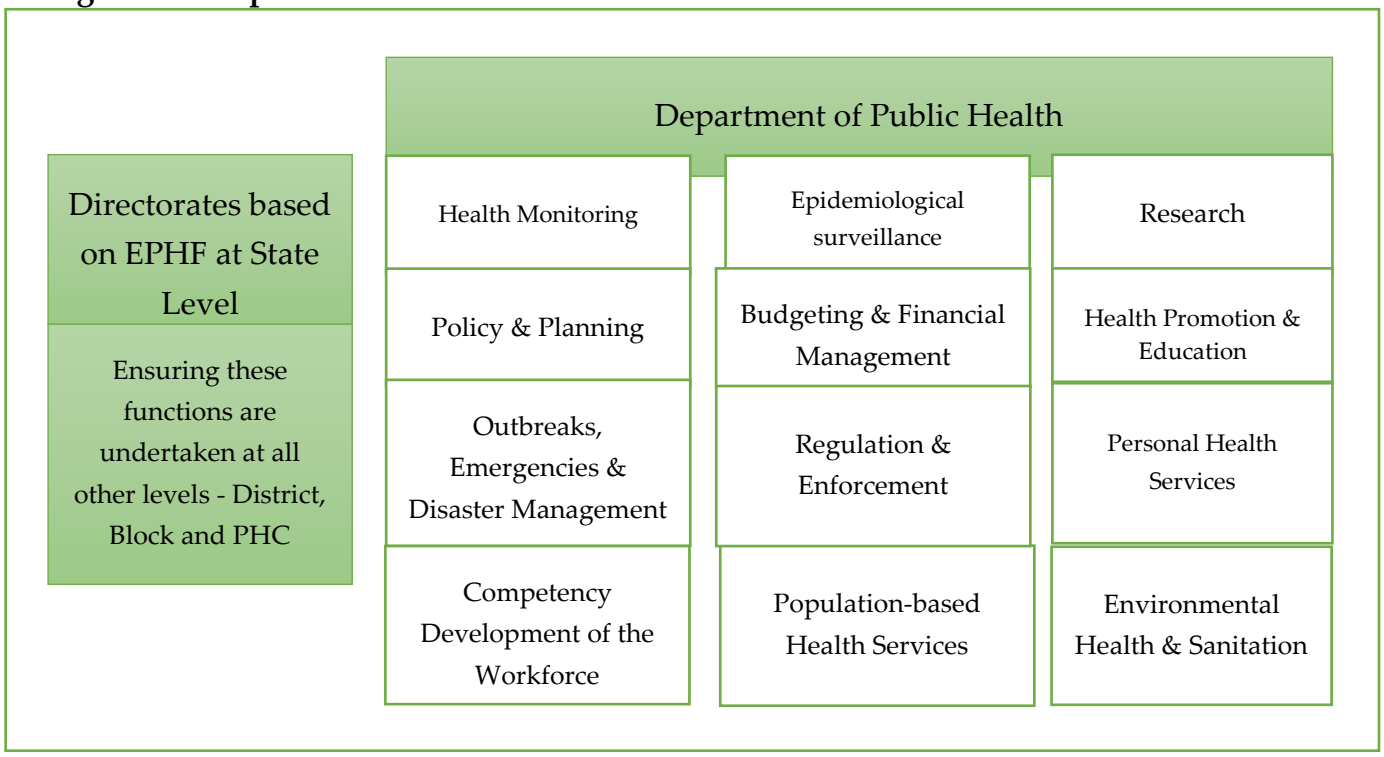
comprehensive pathway for states to undertake such that it goes beyond the creation of a dedicated PH cadre.

Since the WHO first published the list of EPHF in 1998, the EPHF framework has been frequently used by WHO regions, member countries and other global health actors to comprehensively define PH competencies and chart various health system reforms. Most member countries have used the EPHF framework to conduct a performance assessment of their existing PH system. Their respective health ministries and/or secretariats identified strengths and weaknesses within the system and developed specific interventions that were designed to sustain good practices and bridge gaps.

However, the rationale behind creating the EPHF framework was always to go beyond performance assessment and foment concrete action to improve PH practice, thus ultimately strengthening the overall health system. According to WHO (India is a member country of the WHO), the EPHF framework helps countries to better organise capacities and institutions that underpin their PH services. A couple of countries that have done this are Costa Rica and Argentina. Between 2004 and 2005, Costa Rica leveraged the EPHF framework to readjust its existing organisational structure of the Ministry of Health (for example, through the creation of a research department). Since 2007, Argentina has been using the EPHF approach to strengthen the organisation of the Ministry of Health (for example, through the creation of directorates of chronic NCDs and vector-borne diseases at the national level and health promotion units at the provincial level).

We recommend that states should work towards a long-term vision of realigning their health department based on the 12 EPHF (Figure 8.1). This would also mean that (i) the outlook shall not be limited to curative and individual care but include and prioritise preventive and population level health care, and (ii) it will adapt the 12 EPHF such that it aligns with the state's health care priorities. The existing DoHFW should be rechristened as 'Department of Public Health' since the EPHF extend beyond just PH to also encompass clinical care, medical education, research, disaster management, and health promotion to name a few.

**Figure 8. 1.Department of Public Health based on Essential Public Health**




Source: Conceptualised by Centre for Budget and Policy Studies.

To traverse along the recommended pathway, we recommend that NE states should undertake the following **ten steps** :

11. Determine EPHF that are most critical for the state and suitably adapt them as required. States could also look at combining synergistic EPHF to ensure effective implementation of the same.
12. Map how the EPHF will be executed at each level: state, district, block, and primary care level. For e.g., what aspects of data collection for disease surveillance need to be carried out at the primary health care, block, district, and state levels.
13. Mapping of EPHF should also include envisioning a newly organised workforce that can effectively implement it across all levels. Apart from clearly defining the roles and responsibilities of the various positions of this newly organised workforce, the mapping exercise should identify the infrastructure needs as well.
14. Classify the positions as i) cadre or non-cadre from a roles and responsibilities perspective, and 2) clinical, PH, or common/both from a functional perspective. Finalise the eligibility criteria/educational qualifications and

desired experience needed for these positions, along with pathways for career progression.

15. Based on the above point, arrive at a cadre structure for PH and clinical specialists along with sub-cadres for other positions that are classified as either frontline, technical, or support functions.
16. Identify the gaps between the existing workforce and the newly organised workforce in terms of i) labour and ii) training.
17. Develop a blueprint that provides solutions to how these gaps can be potentially filled, such as a specific short-term training programme or setting up of a training institute in PH to build a talent pipeline.
18. To begin with, implement the blueprint at the directorate level within the first five years (short-term). The reason for going top-down is due to the criticality of the directorate level while also having lesser gaps to fill in terms of workforce.
19. Next, implement the blueprint at the district level within five to ten years (mid -term).
20. Finally, implement the blueprint at block level and below within the next 10 to 15 years (long-term).

## References


Acheson, D. (1988). *Public health in England. The report of the committee of inquiry into the future development of the public health function*. https://www.euro.who.int/en/health-topics/Health-systems/public-health-services

Agarwala, T. (2020). Assam floods: Children account for 44.5 per cent of deaths. *The Indian Express*. https://indianexpress.com/article/north-east-india/assam/assam-floods-children-account-for-44-5-per-cent-of-deaths-6537694/

Ahmed, R. A. (2020). *An Epidemiological Assessment of Malaria Cases in Udalguri District of Assam with Special Emphasis on Intensied Malaria Control Project (2008 to 2017)*. https://doi.org/10.21203/rs.3.rs-83707/v1

Ambekar, A., Agrawal, A., Rao, R., Mishra, A. K., Khandelwal, S. K., & Chadda, R. K. (2019). *Magnitude of substance use in India*.

Assam Department of Health and Family Welfare. (2021). *Minutes of the 21st EC Meeting of the State health Society, Assam*. https://nhm.assam.gov.in/sites/default/files/swf_utility_folder/departments/nhm_lipl_in_oid_6/menu/about_us/minutes_of_11th_shm_meeting_held_on_21st_aug_2019_2.pdf

Begum, G. (2019). Levels of childhood nutritional status among the Muslims of char areas in Barpeta district, Assam. *International Journal Of Community Medicine And Public Health*, *6*(2), 682. https://doi.org/10.18203/2394-6040.ijcmph20190191

Bettcher, D. W., Sapairie, S., & Goon, E. (1998). Essential public health functions: results of the international Delphi study. *World Health Statictics, Quarterly*, *51*(1), 44–54. https://pubmed.ncbi.nlm.nih.gov/9675808/

*Census 2011*. (2011). Census 2011. https://www.census2011.co.in/census/state/assam.html

Centers for Disease Control and Prevention. (2020). *10 Essential Public Health Services*. https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html

Central Bureau of Health Intelligence. (2018). *National Health Profile,2018* (Issue 13).

Das Gupta, M., Desikachari, B. R., Somanathan, T. V., & Padmanaban, P. (2009). *How To Improve Public Health Systems : Lessons From Tamil Nadu*. *October*. http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)62000-5/fulltext#back-bib125

Das, V. K., & Vaibhav, V. (2021, December 13). Northeast needs to boost its economy. Even Assam has failed to participate in India's growth. *The Print*. https://theprint.in/opinion/northeast-needs-to-boost-its-economy-even-assam-has-failed-to-participate-in-indias-growth/780676/

Davies, R. (2015, August). India floods - 500,000 affected in Manipur. *FloodList*.

Dev, V., Sharma, V. P., & Barman, K. (2015). Mosquito-borne diseases in Assam, north-east India: current status and key challenges. *WHO South-East Asia Journal of*

*Public Health*, *4*(1). www.searo.who.int/

Goyal, A. K. (2020). *Composite Health Quality Index : Assessing the State of Public Health In The Districts of North Eastern States of*. *17*, 146–152. https://doi.org/10.36648/205

Gupta, M. Das, Rani, M., Acharya, S., Bardhan, P., Berman, P., Howes, S., Jhala, K., Miovic, P., Moore, M., Mukherjee, R., Nath, L., & Yusuf, S. (2004). *India's Public Health System: How Well Does It Function at the National Level?* (Policy Research Working Papers). World Bank, Washington, D.C. https://doi.org/10.1596/1813-9450-3447

Gupta, R., & Xavier, D. (2018). Hypertension: The most important non communicable disease risk factor in India. *Indian Heart Journal*, *70*(4), 565–572. https://doi.org/10.1016/j.ihj.2018.02.003

High Court of Gauhati. (1994). *Medical Graduates Association V. State of Nagaland: Civil Rule No. 66(K) of 1993*.

Humtsoe, M. Y., & Soundari, M. H. (2019). Maternal health care practices of Lotha Naga tribal women in India. *PEOPLE: International Journal of Social Sciences*, *5*(1), 738–755. https://doi.org/10.20319/pijss.2019.51.738755

IIPS, & ICF. (2021a). *National Family Health Survey -5, 2019-20 : Meghalaya*.

IIPS, & ICF. (2021b). *National Family Health Survey (NFHS-5),2019-21:Assam*. http://rchiips.org/nfhs/NFHS-5Reports/Assam.pdf

Indian Council for Medical Research(ICMR), santa of India (PHFI), & The Institute for Health Metrics and Evaluation (IHME). (2017). *India: Health of the Nation's States-The India State-level Disease Burden Initiative*. https://www.healthdata.org/sites/default/files/files/policy_report/2017/India_Health_of_the_Nation%27s_States_Report_2017.pdf

Inter Agency Group. (2017). *Joint Needs Assessment Report: Assam Floods 2017*. https://sphereindiablog.files.wordpress.com/2017/08/joint-needs-assessment-report_assam-floods_2017_final.pdf

Jamir, S., & Khan, N. . (2018). Community awareness on landslide disaster: "Experience of Nagaland." In A. Singh, M. Punia, N. P. Haran, & T. B. Singh (Eds.), *Development and Disaster Management: A Study of the Northeastern States of India* (pp. 361–372). Palgrave Macmillan.

Kipgen, H. (2018). *Maternal and Child Health Status of the Thadou-Kuki of Senapati District, Manipur: An Anthropological Study* (Issue August 2018). North-Eastern Hill University, Shillong, Meghalaya.

Laloo, D., & Hemalatha, S. (2011). Ethnomedicinal plants used for diarrhea by tribals of Meghalaya, Northeast India. *Pharmacognosy Reviews*, *5*(10), 147–154. https://doi.org/10.4103/0973-7847.91108

Longvah, T., Khutsoh, B., Meshram, I. I., Krishna, S., Kodali, V., Roy, P., & Kuhnlein, H. V. (2017). Mother and child nutrition among the Chakhesang tribe in the state of Nagaland, North-East India. *Maternal and Child Nutrition*, *13*(October 2017), 1–12. https://doi.org/10.1111/mcn.12558

Loukrakpam, B., Rajendran, A., Madhari, R. S., Boiroju, N. K., & Longvah, T. (2020).

Dietary adequacy and nutritional status of Meitei community of Manipur, Northeast India. In *Maternal and Child Nutrition* (Vol. 16, Issue S3, pp. 1–12). https://doi.org/10.1111/mcn.13046

Lyngdoh, A. W. (2014, February 7). Meghalaya scripts sanitation success - State tops in community participation . *Telegraph Online*. https://www.telegraphindia.com/north-east/meghalaya-scripts-sanitation-success-state-tops-in-community-participation/cid/215338/

Maheo, L. M., & Devi, A. M. (2017). Maternal and child health care: A case study among the Rongmeis of Manipur, India. *International Journal of Humanities and Social Sciences*, *11*(8), 2192–2197.

Medhi, G. K., Hazarika, N. C., Shah, B., & Mahanta, J. (2006). Study of health problems and nutritional status of tea garden population of Assam. *Indian Journal of Medical Sciences*, *60*(12), 496–505. https://doi.org/10.4103/0019-5359.28979

Meghalaya Health & Family Welfare Department. (2021, March 9). *Meghalaya Health Policy, 2021*. http://meghealth.gov.in/docs/Meghalaya Health Policy 2021.pdf

Meghalaya State Disaster Management Authority. (2016). *Meghalaya State Disaster Management Plan, Volume 1*. https://megrevenuedm.gov.in/reports/Meghalaya_State_Disaster_Management_Plan_Volume1.pdf

Ministry of Development of North Eastern Region. (n.d.). *Allocation of Business Rules*. Retrieved March 29, 2022, from https://mdoner.gov.in/about-ministry/allocation-of-business-rules

Ministry of Health and Family Welfare. (2017). *National Health Policy,2017*. http://cdsco.nic.in/writereaddata/National-Health-Policy.pdf

Ministry of Health and Family Welfare. (2021, February 12). *Maternal Mortality Rate, Press Release*. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1697441

Mishra, P. S., Pautunthang, N., Marbaniang, S. P., & N, A. K. (2021). Geographical divide led inequality in accessing maternal healthcare services between hills and valley regions of Manipur state, India. *Clinical Epidemiology and Global Health*, *11*(April), 1–7. https://doi.org/10.1016/j.cegh.2021.100744

MoHFW. (n.d.). *National Health Mission*. Retrieved May 10, 2022, from https://nhm.gov.in/index4.php?lang=1&level=0&linkid=445&lid=38

NHM Meghalaya. (n.d.). *Maternal Death of Meghalaya*. Retrieved May 12, 2022, from http://nhmmeghalaya.nic.in/programmes/hmis/mmr.pdf

Ningombam, S., Hutin, Y., & Murhekar, M. V. (2011). Prevalence and pattern of substance use among the higher secondary school students of Imphal, Manipur, India. *National Medical Journal of India*, *24*(1), 11–15.

Non-Communicable Diseases Claim 5.2 Million Lives in India. (2019). *The Sentinel*. https://www.sentinelassam.com/guwahati-city/non-communicable-diseases-claim-5-2-million-lives-in-india/

NSS. (2018). Key indicators of social consumption in India: Health. *National Sample Survey Organisation*, 1–99.

http://mail.mospi.gov.in/index.php/catalog/161/download/1949
Planning Commission of India. (2011). *High Level Expert Group Report on Universal Health Coverage* .
Raghuraman, G., Sarah, M. A., Rao, M. B. V., Minni, P., & Jha, J. (2019a). *Public Expenditure on Health in Maharashtra*. http://cbps.in/wp-content/uploads/Public-Expenditure-on-Health-in-Maharashtra-Report-6Jan2021.pdf
Raghuraman, G., Sarah, M. A., Rao, M. B. V., Minni, P., & Jha, J. (2019b). *Public Expenditure on Health in Rajasthan*. http://cbps.in/wp-content/uploads/Public-Expenditure-on-Health-in-Rajasthan-Report-6-Jan2021.pdf
Rajbangshi, P. R., & Nambiar, D. (2020). "who will stand up for us?" the social determinants of health of women tea plantation workers in India. *International Journal for Equity in Health*, *19*(1). https://doi.org/10.1186/s12939-020-1147-3
Rane, T. M., Goswami Mahanta, T., Baruah, M., & Baruah, S. D. (2019). Epidemiological study of maternal death in Assam. *Clinical Epidemiology and Global Health*, *7*, 634–640. https://doi.org/10.1016/j.cegh.2019.02.007
Saikia, N., & Debbarma, B. (2020). The socioeconomic correlates of substance use among male adults in Northeast India. *Clinical Epidemiology and Global Health*, *8*(1), 149–157. https://doi.org/10.1016/j.cegh.2019.06.004
Shah, P. (2018). *Healthcare in Meghalaya: An uphill battle | ORF*. Health Express. https://www.orfonline.org/expert-speak/healthcare-meghalaya-uphill-battle/
Simran, B. (2021, February 13). Water in 14 districts of Assam affected by arsenic, fluoride: Govt. *East Mojo*. https://www.eastmojo.com/news/2021/02/13/water-in-14-districts-of-assam-affected-by-arsenic-fluoride-govt/
Sphere India. (2015). *Manipur Floods , 2015* (Issue August).
Tushi, A., Rao, S., Pattabi, K., & Kaur, P. (2018). Prevalence of risk factors for non-communicable diseases in a rural tribal population of Mokokchung, Nagaland, India. *National Medical Journal of India*, *31*(1), 11–14. https://doi.org/10.4103/0970-258X.243405
Walker, B. (1989). The future of public health: The institute of medicine's 1988 report. *Journal of Public Health Policy*, *10*(1), 19–31. https://doi.org/10.2307/3342941
Walling, I. (2020, April 17). Half a doctor for every 1000 people in Nagaland . *The Morung Express*. https://morungexpress.com/half-doctor-every-1000-people-nagaland
World Bank. (n.d.). *Improving Governance and Increasing Community Engagement*. Retrieved May 10, 2022, from http://www1.worldbank.org/publicsector/bnpp/Preventhealth.htm
World Bank. (2019). *Determinants of nutrition in Nagaland, India - Maternal and child health and nutrition services*.
Yadav, R., & Shekhar, C. (2019). Trends and regional variations in communicable and non-communicable diseases in India: 1996-2014. In A. R. Chaurasia (Ed.), *India 2018: Child Health and Mortality* (pp. 65–90). MLC Foundation.
Zahan, S. A. (2017). *Assam's fluorosis problem: When nature serves poison*. India Water

Portal. https://www.indiawaterportal.org/articles/how-poison-deep-leaving-assam-villagers-crippled