



Nepal Health Sector Support Programme III (NHSSP – III)

**A Final Report on
Health Infrastructure Policy, Codes and Standards Gap Analysis
26th May, 2017**



Disclaimer

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Acronyms

CDC	Compensation Determination Committee
CDO	Chief District Officer
CLPCU	Central level Project Coordination Unit
DDG	Deputy Director of General
DFID	UK, Department for International Development
DoHS	Department of Health Services
DRR	Disaster Risk Reduction
DUDBC	Department of Urban Development and Building Construction
GoN	Government of Nepal
HVAC	Heating, ventilation and Air Conditioning
INGO	International Non-governmental Organization
JAR	Joint Annual Review
MoCTCA	Ministry of Commerce, Trade and Civil Aviation
MoHA	Ministry of Home Affairs
MoE	Ministry of Education
MoF	Ministry of Finance
MoFALD	Ministry of Federal Affairs and Local Development
MoUD	Ministry of Urban Development
MRT	Mandatory Rule of Thumb
NAPA	National Adaptation Programme of Action
NGO	Non-government Organization
NHSS	Nepal Health Sector Strategy
NHSSP	Nepal Health Sector Support Programme

NPC	National Planning Commission
NNBC	Nepal National Building Code
NRA	National Reconstruction Authority
NSET	National Society for Earthquake Technology
NSDRM	National Strategy for Disaster risk Management
PDRF	Post Disaster Recovery Framework
SDE	Senior Divisional Engineer
SFDRR	UN Sendai Framework for Disaster Risk Reduction

Executive Summary

Over the past 10 years, the Ministry of Health in Nepal has made considerable improvements in the planning, operations and development of health infrastructure. The policy context for health infrastructure has changed for the better. However, incremental developments have resulted in both outdated policies and gaps in policy for health infrastructure.

This report lays the foundation for analysis of the health infrastructure policy environment and sets out a preliminary assessment of gaps in the coverage of policies, codes, guidelines and standards. A framework for analysis has been adopted from international comparative practice in health policy development and is used to categorize coverage by national, sub-national and sectoral levels.

Ten areas for improvement in the policy environment have been identified as necessary for further investigation:

- Land availability and land selection criteria
- Building codes and retrofitting guidelines
- Heating, ventilation and air conditioning provisions
- Sanitary and waste management requirements
- National health policy and local infrastructure development policy
- Implementation of health infrastructure projects
- Health infrastructure public procurement guidelines
- Climate change perspective and adaptation
- The implication of the merging federal dispensation and coordination between stakeholders
- Construction management

Chapter One: Introduction

1.0 Background

1.1 Nepal Health Sector Strategy and Support Programmes

Performance in the Nepal health sector has gradually progressed over the past 10 years under the first and second Nepal Health Sector Strategies (NHSS1 and 2), witnessed by annual reductions in the rates of maternal and under-fives mortality. The quality of health infrastructure has steadily improved through better management by the Ministry of Health (MoH) and Department of Urban Development and Building Construction (DUDBC). The Nepal Health Sector Support Programme (NHSSP) infrastructure team has supported the MoH and DUDBC in strengthening the planning, programming, budgeting and construction of health facilities. The team's contributions include capacity enhancement for preparation of procurement plans and e-tendering, support for increased quality of technical designs, operational standards and on-site quality assurance.

The health infrastructure work stream continues with Phase 3 of the Health Sector Support Programme (NHSSP-3) which will be implemented from March 2017 to December 2020. The programme has three key performance areas:

- Building a strong policy environment, to ensure that the MoH and DUDBC adopt and implement relevant codes, standards and guidelines for construction and maintenance of health facilities and infrastructure
- Enhancing the capacity of MoH, DUDBC and the private sector (including contractors and construction professionals) to be efficient, technically competent and capable of implementing resilient design, construction and maintenance
- Building resilient and effective health infrastructure to ensure that health facilities are retrofitted, rehabilitated, maintained and monitored in earthquake affected districts, and that facilities are resilient to future seismic shocks, environmental impacts and other natural disasters.

These activities are intended to continue the improvements so far achieved in MoH and DUDBC, and maintained in the post-2015 earthquake. The MoH's health infrastructure capital programme is key to improving health infrastructure and generating employment and economic activity in the construction sector. In addition to replacing the facilities destroyed or damaged in the earthquake, the MoH is required to upgrade and retrofit between 100 – 150 health facilities nationally each year, as part of the Government of Nepal's (GoN) commitment to upgrade existing sub-par structures to standard health facilities. Consequently, the MoH's capital works programme will require the development of approximately 1,000 health facilities over the next five years.

Over the past 10 years the MoH has developed sets of standards and guidelines for design, construction and maintenance of health infrastructure, while the GoN has introduced improved requirements for more robust infrastructure, including the Nepal National Building Code (NBC with amendment) (1994), National Strategy for Disaster Risk Management (2008) and the Reconstruction and Rehabilitation policy (2016), which promotes the principle of Build Back Better in infrastructure provision.

The public health sector is about to be transformed with the transition to the new federal dispensation. This will require strong and consistent policy arrangements for health infrastructure across all structures of national and sub-national government, as well as support to the GoN's programme of continuous improvement.

1.2 Challenges in the policy environment

Unfortunately, the health infrastructure policy environment still retains significant challenges and areas for improvement. Limitations in technical capacity, changes in political priorities that divert attention and reduce follow-through, and weak coordination among government departments mean that policies are not always enforced, or that gaps in policy coverage continue to persist.

The institutional context for sub-national and local governance in Nepal is generally weak, and it has proved difficult to transfer and implement policy imperatives down to District level and below. The current drive to establish federal arrangements could also divert attention from the need to consolidate strong and consistent policy arrangements across health infrastructure at all levels.

The NHSSP-3 infrastructure team is moving to address these limitations in the health policy environment by identifying key areas for strengthening, including national protocols and practices in respect of seismic resilience, and the incorporation of measures to deal with climate change-induced hazards to the development of health infrastructure.

In addition, there is a need to assess the current suite of policies, codes and standards that relate to health infrastructure development, operations and maintenance to identify gaps and shortcomings to be addressed over the timeframe of the NHSSP-3.

1.3 Rationale and purpose of this report

This report sets out an overview of the current policy environment, focusing on planning, construction and maintenance of health facilities and infrastructure. From this assessment, it identifies under-performing areas to be made more effective or enforced, issues for which new policies, codes or standards need to be developed, and opportunities where interventions may add to the MoH's efforts in responding to needs.

The report recommends follow-up actions to meet the relevant targets, milestones and indicators for Performance Area 1: Policy and Standards Development in the NHSSP-3 work plan.

The methodology used to develop this report includes a desk-based review of the relevant policy, codes and standards documents, and key informant interviews with appropriate officials and stakeholders. The

approach to analysis is drawn from the international best practices to developing national health policy (Walt 1994 and Matus 1996).

Chapter 2: Review of existing policy, standards and codes

This section sets out an overview and appraisal of relevant health infrastructure policies standards and codes, as well as providing contextual information on the capital programme and transition to federal arrangements. Policies have been categorized in two levels: macro policy which relates to national government and micro and or sectoral policy which related to the sub national level or as has specific sectoral perspective. It is discussed in detailed accordingly. Table 1 illustrates the categorization and identifies specific areas of focus that have been considered in this gap analysis.

Policy types and policy levels		
Policy type	Macro policy	Micro policy / Sectoral Policy
Policy level	National Government	Ministry of Health (MoH) Department of Urban Development and Building Construction (DUDBC) National Reconstruction Authority (NRA)
Policy example	Constitution of Nepal (2015) National Health Policy (2017) Local Infrastructure Development Policy (2004) Land Acquisition Act (1977) Building Act (1998) Nepal National Building Code (1994) National Strategy for Disaster Risk Management(2008) Post Disaster Recover Framework (2015)	National Health Sector Strategy, (2015-2020) Standard Guidelines for Design and Construction of Health infrastructure (2017) Land Selection Guidelines for Health Infrastructure (2017) Construction Code of Conduct (DUDBC) (2011) Maintenance Strategy For Infrastructure in the Health Sector(2007) Standards Guidelines for Retrofitting of Existing Buildings (DUDBC) (2016)

Table 1: Policy types and levels (Model Adopted from Walt (1994:41))

2.1 Capital investment in health sector infrastructure remains a priority

The national plan and annual budget programmes for the fiscal year 2016/17 clearly defined the priorities for the post-earthquake infrastructure rehabilitation and new construction; these priorities include health, education, drinking water and sanitation. Reconstruction and rehabilitation works of existing health infrastructures are targeted to be completed within three years. (Budget Speech 2016/17, Ministry of Finance (MoF)).

More specifically, there are plans for the phased implementation of the National Health Insurance Plan, and the development of Bir Hospital as an international standard hospital (Budget Speech 2016/17, MoF)

2.2 Context of federalism and implications for health infrastructure

Nepal's transition to a federal system entails massive state restructuring, involving the creation of seven new provinces and 744 local entities. The local entities comprise four metropolitan and 13 sub-metropolitan areas, 246 municipalities and 481 rural municipalities. The GoNs in the process of establishing these structures in the line with the mandate of the Constitution of Nepal 2015 (Part 5, Constitution of Nepal, 2015).

The proposed federal health governance structure establishes a direct relationship between local level governance entities and health institutions. Seven provincial health ministry will be set up and function under the Federal Ministry of Health. The Federal Ministry will contain a divisional health directorate responsible for the coordination of the 744 local level health offices (Concept presentation by MoH, April 2017).

However, there remains a need for clarification of roles and responsibilities in certain areas. The Ordinance on Local Level Governance approved by the National Council of Ministers (2017) positions the overall management of primary and secondary levels of health centres throughout the country as the responsibility of municipalities and rural municipalities. This clearly has implications for operations and maintenance of health infrastructure within the national framework. Precise details of how these functions will be operationalised are still awaited.

2.3 Disaster Risk Reduction governance and Build Back Better principles

The GoN has gradually strengthened the national policy framework for disaster prevention and management, with specific areas of reference to health infrastructure. The **GoN National Strategy for Disaster Risk Management (2008)** defined the gaps and issues relevant to health infrastructure as follows:

- Despite the presence of an effective programme of health and nutritional surveillance and preparedness for response epidemics, the existing health infrastructure had not been used for delivery of preventive measures against other hazards
- The health-sector emergency preparedness and response plan had not been implemented fully, the identified vulnerabilities in the major hospitals systems had not been addressed, and a majority of health facilities including the major hospitals lacked emergency preparedness and response plans

- Despite the fact that almost all major hospitals had been assessed as having high to very high level of vulnerabilities to earthquake, no efforts had been made to enhance seismic performance of these facilities. (National Society for Earthquake Technology, 2008)

This strategy prompted improvements in specific aspects of design and construction of health facilities, generally supported with technical assistance under the NHSSP.

The **UN Sendai Framework for Disaster Risk Reduction (SFDRR)** is an international non-binding accord aimed at improving responses to disasters through adoption of improved risk reduction and resilience standards, and includes climate change as part of resilience strategies. The framework aims to achieve the following outcome over the period 2015 to 2030:

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, social, cultural and environmental assets of persons, businesses, communities and countries.(United Nations, 2015)

More specifically, the framework calls on central government to lead in reducing disaster risk through effective partnerships with local government, civil society, non-governmental organisations and the private sector. The main areas for activity to achieve the Sendai objectives are:

- Understanding disaster risk
- Strengthening governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response and to 'Build Back Better' in recovery, rehabilitation and reconstruction.

The SFDRR emphasises that it is critical to adopt Build Back Better principles in the post-disaster period, and to integrate Disaster Risk Reduction (DRR) into reconstruction and development programmes. Of specific relevance to Nepal and the MoH, the SFDRR identifies particular Build Back Better actions relevant for the development of health infrastructure:

- Promote the resilience of hospitals and health facilities to ensure they are safe, effective and operational during disasters and in the post-disaster period
- Incorporate DRR into post-disaster recovery and reconstruction activities such as land-use planning, structural standards improvement and information sharing
- Assess the location of public facilities and relocate or mitigate hazard exposure if necessary.

The Prime Minister's message in the **Post Disaster Needs Assessment (PDNA 2015)** refers to the SFDRR as guiding Nepal's recovery and reconstruction efforts post-earthquake, adopting three key aspects:

- The concept of Build Back Better
- A move away from silos to working on an integrated model of recovery which takes into account environmental factors, underlying vulnerabilities and community knowledge

- Recognition of the importance of various stakeholders, with particular emphasis on communities themselves.

The PDNA states that DRR principles will be extended to planning not only in the earthquake affected districts, but to cover the whole country. The PDNA states explicitly that schools and health centres will be reconstructed on the principle of Build Back Better, and the overall level of services improved through greater attention to effective delivery and governance.

For the health sector over the five years to 2021, the PDNA commits to:

- Improving techno-legal requirements, such as building codes and standards
- Mainstreaming DRR into the development of the health sector, and also including climate change adaptation
- Support for strengthening and retrofitting of hospitals and health posts
- Strengthening institutional capacity for disaster preparedness
- Applying Build Back Better principles in the development of new health infrastructure, including a rigorous assessment of facilities' capacity, geography and size of catchment.

While the PDNA demonstrates that the 'Build Back Better' concept is well understood, the challenge will be to implement these principles and the 'governance of risk' in the health infrastructure reconstruction and development programme.

2.4 Application of building codes and disaster risk reduction measures

The GoN established the National Reconstruction Authority (NRA) in 2015 as the driver of the post-earthquake reconstruction effort. Under the **Post Disaster Recovery Framework (2015)** the NRA enforces the National Building Code and ensures the inclusion of earthquake resistant features in all houses, public buildings and social infrastructure in the entire reconstruction programme. The NRA will work with the leading ministries—the Ministry of Home Affairs (MoHA), MoUD and the Ministry of Federal Affairs and Local Development (MoFALD)—to support a disaster risk reduction programme to address risks from various hazards. As expressed in the National Strategy for Disaster Risk Management (NSDRM), a key initiative of the DRR programme will be to introduce a system that ensures adherence to the building codes in Nepal. In addition, the recovery programme will improve disaster preparedness across the country through search and rescue teams, emergency communications and emergency operations centres. (PDRF, 2017)

The implementation arrangements for recovery and reconstruction in PDRF report defined four ministries (MoUD, MoFALD, Ministry of Education (MoE) and MoCTCA) with Central Level Project Coordination Units (CLPCU). These CLPCUs provide technical and assistance and capacity building support for reconstruction, setup a monitoring system to track the progress of the reconstruction programme, integrate gender and social inclusion in recovery and integrate NGOs and INGOS in recovery (PDRF, 2017).

2.5 Local Infrastructure Development

The **Local Infrastructure Development Policy (LID)(2004)** relates primarily to rural transport, utilities, water and sanitation infrastructure. However, it includes a section on ‘social infrastructure’ which includes the construction, operation and maintenance of local health facilities and states that construction, operation and maintenance of these facilities is the responsibility of the relevant local entity. The relevance of the LID is likely to be affected by the emergent federal legislation and the allocation of responsibilities needs to be kept under review.

2.6 Nepal Health Sector Strategy 2015-2020

The Nepal Health Sector Strategy (NHSS) is the primary instrument to guide the health sector over the period 2015-2020. It adopts the vision and mission set forth by the National Health Policy and carries the ethos of Constitutional provision to guarantee access to basic health services as a fundamental right.

The NHSS emphasises the significance of human resources, infrastructure, procurement and supply chain as essential, interconnected and complex health systems components that need to function in tandem for smooth service delivery. These systems are altogether geared towards ensuring optimal deployment and quality of health personnel, setting up minimum infrastructure and the timely procurement, uninterrupted supply of drugs and logistics.

The NHSS prioritises the production, deployment and retention of human resources, standardizing procedures for site selection, developing and upgrading physical infrastructure, maintenance, timely procurement and efficient supply chain. Following the 2015 earthquake there is an urgent need to replace destroyed and damaged facilities and install resilient and responsive health systems in the affected areas.

The focus to 2020 is on building and repairing physical infrastructure and medical equipment in earthquake-affected districts. A master plan is envisioned to guide building of earthquake resilient infrastructures in these districts and across the nation, considering population dynamics, geography, and in strategic sites.

Health infrastructure and medical equipment suffer from unplanned and costly maintenance. This strategy prioritizes improving capacity for management of health infrastructure and medical equipment. Specifically, this will require revising standards, managing inventories, planning and conducting routine maintenance, and replacing out-of-date buildings and equipment.

2.7 Maintenance Strategy for Infrastructure in the Health Sector (Building and Support Services), 2007

The MoH published the maintenance strategy for health infrastructure in 2007. This strategy outlined the main objectives as sustainability of health infrastructure and development of standards procedure of maintenance. This strategy also defined the types and process of maintenance in health infrastructure.

2.8 Standard guidelines for design and construction of health infrastructure, 2017

The MoH with the support of NHSSP prepared standard guidelines for design and construction of health infrastructure. This guideline provides standard type designs and design requirements of the different levels of health facilities. This guideline also provides information on land identification / selection, master planning, site planning and waste management.

2.9 Framework for Land Acquisition and Resettlement

The **Land Acquisition Act (1977)** and its subsequent amendment in 1993 specify procedures of land acquisition and compensation. The Act empowers the Government to acquire any land, on the payment of compensation, for public purposes or for the operation of any development project initiated by government institutions. There is a provision of Compensation Determination Committee (CDC) chaired by Chief District Officer to determine compensation rates for affected properties. The Act also includes a provision for acquisition of land through negotiations and thus provides a space for voluntary donation. It also states that the Government may acquire any land for any purpose through negotiations with the concerned land owner. It shall not be necessary to comply with the procedure laid down in this act when acquiring land through negotiations. (NHSSP, 2009)

2.10 Land selection guidelines for health infrastructure, 2017

In 2017, the MoH published guidelines regarding selection criteria of land for implementing health infrastructure. Guidelines described the minimum land area for different types of prototype designs. Furthermore, it encapsulates the criteria of land for health infrastructure.

2.11 Guidelines on upgrading criteria of existing Health infrastructure, 2017

In 2017, the MoH revised guidelines regarding upgrading criteria of existing health infrastructure. This guideline defined the phased upgrading of existing health infrastructure in four phases. Phases of upgrading health information systems are used for prioritization and selection.

2.12 National Health Policy 2015 / 2071 B.S

The National Health Policy, 2015 / 2071 B.S was prepared by MoH. This policy described the retrofitting of existing health infrastructure as one of the existing challenges in health sector development.

2.13 Building Act and Nepal National Building Code

The **Building Act 1998** was enacted in 2006 to protect buildings against the potential damage caused by various hazards. According to it, every building should follow the provisions of act prior and during construction. At present, it is necessary to promote and circulate the importance of the Nepal National Building Code and create awareness regarding construction earthquake resistant buildings.

The **Nepal National Building Code (NNBC, 1994)** defined the four different levels of sophistication of design and construction. Part I defined the international state of art which is applied for modern and sophisticated buildings. Part II defined the professionally engineered buildings that should be considered by designers. Part III defined the mandatory rule of thumb (MRT) which is applied in designing by middle

level technical manpower and part IV defined the guidelines for remote rural buildings (GON/DUDBC/NNBC, 1994). The purpose of the NNBC is to:

- Maintain uniformity for materials and technology
- Account for safety measures (safety, comfort and use value)
- Enforcement of standards on earthquake resistant buildings
- Provide guidance to designers and masons
- Provide information and standards requirements regarding architectural, electrical and sanitary designs.

The above codes are focused on ***new construction only***; however, DUDBC has prepared the standard guidelines for retrofitting of existing buildings. Three different guidelines are prepared for three different types of structure like adobe, masonry and reinforced concrete. The guidelines defined the categorizations of damage and suggested process for retrofitting and maintenance (DUDBC, 2016).

2.14 Construction Management

The DUDBC has prepared the **Construction Code of Conduct for Health Infrastructure** in December 2011 (revised in 2013/14). This code of conduct defined the provisions for site selection, geo-technical investigations, cost estimates, coordination between stakeholders, contract administration, handover process etc. (Construction Code of Conduct, DUDBC, 2011).

Chapter 3: Identification of gaps and areas for improvement

This section identifies gaps in policy, code and standard coverage, and areas that are under-served and need improvement. It focuses on practical requirements to meet the foreseeable needs of the health infrastructure programme. The gaps identified in policy, standards and codes with appropriate suggestions and recommendations are briefly presented in Table 2 below. Details are defined accordingly.

The policy/code/standard, the gaps and Recommendations			
Identified Gaps	Reviewed documents	Recommendations	Policy/Standard/codes
Gaps in Land availability and land selection for health facilities	Land Acquisition Act (1977), Detailed engineering assessment of health infrastructure (NHSSP, 2015) Standard guidelines for design and construction of health infrastructure(2017) Land selection guidelines for health infrastructure(2017)	Set up land transfer arrangements Recognize cross-by departmental capital investments Establish a coordination mechanism with local level entities in asset ownership and transfer in federal dispensation	Policy
Gaps in building codes and guidelines	Nepal National Building Code (NNBC)(1994) Standard guidelines for retrofitting of existing buildings(DUDBC, 2016)	Revise the relevant sections of NNBC relating to health infrastructure to be applicable to all construction (at present NNBC is only enforced in new construction) Establish a code for retrofitting of existing buildings	Codes
Gaps on design and provisions of heating, ventilation and air conditioning(HVAC) in health infrastructure	NNBC (207:2003)	Revise the NNBC(207:2003) to include a specific section outlining standards on provision and design of electrical requirements. Upgrade the relevant sections of standard guidelines for design and construction of health infrastructure to include more up to date provisions of HVAC.	Codes

			Standards
Gaps on sanitary and design and waste management issues	NNBC (208:2003) Solid (Medical)Waste Management Act(2011)	Incorporate sanitary design requirements to higher health infrastructure requirements in the relevant section of NBC(208:2003) Establish a coordination mechanism between MoFALD and local level entities, in respect of collection and management of medical waste	Codes Policy
Gap on clear policy in implementation of health infrastructure	National Health Policy, 2017 and Local Infrastructure Development Policy(2004)	Extend the strong coordination mechanism between MOFALD, MoH and DUDBC to avoid duplicating health infrastructure policies	Policy
Gaps in responsibility in implementing health infrastructure	Post Disaster Recovery Framework(2015)	Define roles and responsibilities of the CLPCU(at the MoH) and the NRA to avoid duplication and inefficiencies in delivery of health infrastructure	Policy
Gaps on climate change perspective	National Adaptation Programme of Action (NAPA) (2010)	Generate studies on the impact of climate change on existing health facilities and proposed locations of new health facilities	Standards
Gaps on institutional mechanism in federal dispensation	Constitution of Nepal(2015)	Conduct a consultative process involving key stakeholder workshops. Develop the capacity of local level entities in planning, designing, construction and management of health infrastructure.	Policy
Gaps on construction management	Construction Code of Conduct (DUDBC, 2011)	Review and revise the code of conduct and guidelines to address the technical complexities of health infrastructure	Code

Table 2: The policy/code/standard, the gaps and suggestions (Model Adopted from Matus, 1996)

3.1 Land availability and land selection criteria

Gap: Regulations governing the use of public money prohibit the MoH providing capital investments and improvements to health facilities located on land owned by other entities. This particularly affects small health posts located on local government entities. The NHSSP Health Infrastructure team's conducted a post-earthquake detailed engineering assessment of health infrastructure in September 2015, and identified 270 facilities in the 14 severely affected districts that were restricted from reconstruction as a result of land ownership.

The current policy and regulations need to be reassessed and adjusted appropriately. Financial probity and accountability of public funds must be maintained, while at the same time the opportunity to refurbish, upgrade and repair such facilities must be facilitated. This may involve land transfer arrangements, or a mechanism whereby cross-departmental capital investments are recognised. It must also be noted that this issue falls within the sphere of the emerging federal arrangements on assets ownership and transfer to local government entities, and must be investigated within that context.

3.2 Building codes and retrofitting guidelines

Gap: The Nepal National Building Code (NNBC) is an output of the Building Act 1998 and now almost 20 years old. It includes 23 different codes for four different types of building construction. These codes are basically enforced in new construction. Consequently there is a need to update these sections and where necessary rationalise their application. In particular, the NNBC needs to reflect the specialist nature of health infrastructure provision, strengthen the relevant sections such as NBC 105:1994 relating to seismic design, and improve requirements for retrofitting of existing buildings. While the DUDBC has prepared the standard guidelines for retrofitting of adobe, masonry and reinforced concrete frame buildings, these could be revisited in light of building performance in the 2015 earthquake.

3.3 Heating, ventilation and air conditioning (HVAC) provisions

Gap: HVAC installations are particularly important in health infrastructure construction due to infection control requirements as well as the necessity to maintain a suitable medical and working environment. The relevant NNBC section (NBC 207:2003) lacks specific provisions and should be revised. In addition, the Standard Guidelines for Design and Construction of Health Infrastructure produced by the MoH in 2017 does not include HVAC requirements, and this omission should be rectified.

3.4 Sanitary and waste management requirements

Gap: While the NNBC defines the sanitary and plumbing design requirements for public buildings (NNBC 208:2003), there is no complete definition and consideration of sanitary system and medical waste management requirements in health infrastructure. This is a highly specialised requirement and should be codified.

Operationally, the GoN defines the collection and management of all types of solid waste as the responsibility of local level entities under the Solid Waste Management Act, 2011; local level entities shall collect, dispose and manage the medical waste on demand of medical institutions taking concerned

fees. However, institutional arrangements are weak, with a lack of coordination between health institutions and local level entities, leading to unsafe disposal of waste.

3.5 National health policy and local infrastructure development policy

Gap: The MoH is gradually improving its command of development and management of health infrastructure, and strengthening its operational relationship with DUDBC. This base must be extended further by developing a strong coordination mechanism with the MoFALD. There is a need to avoid duplication in policy implementation, and to strengthen the administrative and technical human resources for the management of health infrastructure at the local level, in this changing context of federal dispensation. This suggestion was put forward under the Joint Annual Review (JAR) in 2014, and is becoming increasingly significant in the changing context of the new federal dispensation.

3.6 Responsibilities for implementation of health infrastructure projects

At present, the procedure for implementation and construction of new health infrastructure is structured as follows: the relevant health facility managers identify requirements which are submitted to the DoHS management division. The DoHS submit these requests to MoH for approval. After approval from MoH, these proposals are forwarded to the National Planning Commission (NPC) and MoF for budgetary provisions and decisions. After addressing the demands from NPC/MoF, budgets are prepared and sent to DUDBC for implementation.

Gap: In this process it is seen that the management division has the crucial role in collecting demands throughout the country for new construction. But, for the maintenance projects, as mentioned in Reconstruction and Rehabilitation Policy (under the Post Disaster Recovery Framework) the demands are directly collected from the NRA, which also acts as the executing agency. This needs to be examined in the light of the decision to establish the CLPCU in the MoH, and an exercise conducted to define the relative roles and responsibilities of the CLPCU and NRA to avoid duplication and inefficiencies in delivery.

3.7 Climate change perspective and adaptation

Gap: In 2010, the GoN approved the National Adaptation Programme of Action (NAPA). NAPA identified nine integrated projects as immediate national priorities in order to respond to climate change. Adapting to climate challenges in public health is specifically defined as one of these priority projects. However, there is a lack of guidelines regarding adaptation of climate change and its effect on the health infrastructure. Study of climate change, fragile geology and relevant design considerations are seen as a prime need for relocating or retrofitting the existing health infrastructure of vulnerable districts as suggested by NAPA. This area will be addressed by a separate exercise under NHSSP-3 involving the development of a new Climate Change and Health Policy Framework.

3.8 Federal dispensation and coordination between stakeholders

Gap: At present there is a lack of clarity in the emergent federal dispensation in the definition of the institutional mechanism and relationship between local level entities, health institutions and DUDBC

regarding the development and implementation of health infrastructure at local level. The organisational setup and working areas of DUDBC in the new federal dispensation are not yet clearly defined. The coordination needs and possible institutional options need to be identified, and a consultative process involving key stakeholder workshops is suggested. There is also the related issue of technical capacity gaps of designing, supervising and managing in implementing health infrastructure at local level, and it is anticipated that more details of staff requirements will emerge as the new local personnel teams are formed.

3.9 Construction management

Gap: Construction management guidelines and the Construction Code of Conduct are the responsibility of DUDBC, and at present while these are generally applicable, they lack a specific focus on the technical complexities of health infrastructure development. It is suggested that the code of conduct and guidelines are examined and revised to address this shortcoming.

Chapter 4: Conclusion

This exercise has identified 9 possible areas for intervention to strengthen the policy environment for health infrastructure. These relate to:

- Strengthening guidelines and codes to reflect the technical nature and specific sectoral requirements for the development, upgrading and operations of health facilities.
- Improvements to coordination mechanisms between the various ministries and government agencies with overlapping responsibilities for health infrastructure.
- Improvements to the internal operation of functions of the MoH and its subordinate departments, particularly in mainstreaming activities to strengthen Disaster Risk Reduction and improve the governance of risk.
- Strengthening national standards and operational requirements for new construction and upgrading of existing buildings under the Nepal National Building Code and its associated specialist areas.
- Making specific improvements to health infrastructure management functions and practices, such as the safe disposal of medical waste.
- Finally, underlying the need for current and continuous operational improvements, the report identifies some of the emergent requirements and operational aspects that the shift to the new federal dispensation will have on the development and management of health infrastructure.

Following final approval of this report, the areas and activities identified above will be incorporated into the NHSSP-3 work plan for Year 1 (to December 2017). The detailed human resource allocation and timeframe to produce these deliverables will be aligned with the major targets, milestones and indicators set out under Performance Area 1 in the work plan.

ANNEX ONE: METHODOLOGY

Study Process

The methodology used to develop this report included a desk-based review of the relevant policy, codes and standards documents and key informant interviews with appropriate officials and stakeholders.

Techniques of Data Collection

Primary data

Primary data are collected by interview with key informants. Key informants are:

1. Representative from DUDBC
 - a. Deputy Director General (DDG), DUDBC
 - b. Senior Divisional Engineer (SDE) from building code section of DUDBC
2. Representative from NHSSP
 - a. Lead advisor
 - b. Senior architect
 - c. Senior earthquake engineer
 - d. Capacity enhancement adviser

Secondary data

Government policy documents, laws, literature, books, manual, guidelines, directives, journals and project document were reviewed. Reference materials from the Internet and information from key informants were also collected.

Analysis and interpretation of data

After completion of required data collection, all the primary and secondary data were processed and analysed to determine the gaps on policy, standards and guidelines on health infrastructure development. The results obtained after analysis are presented.

Study Matrix

The study matrix summarized in the table below defined the over methodology of research.

Objective	Information required	Data source	Methodology	Output
To find out the gaps on policy, standards and codes on health infrastructure development.	Publication, Government existing policy, codes, standards and perception of stakeholders	MoHand DUDBC	Desk Study of Documents, interview	Gaps in existing policy, standards and guidelines.

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