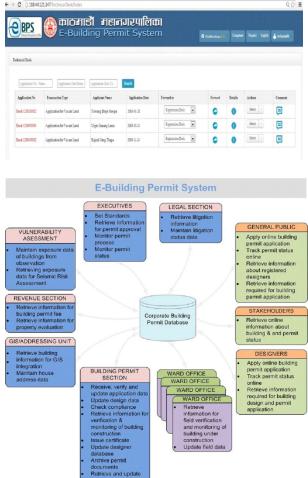## HISTORICAL BACKGROUND

E-BPS, an Electronic - Building Permit System (PISU/RFP/006/2012 – CDRMP/UNDP) is a project initiated by UNDP's Comprehensive Disaster Risk Management Program **(CDRMP)** which aims to provide support in the areas of Institutional and Legal systems within Disaster Risk Management (**DRM**), Climate Risk Management (**CRM**), Community-based Disaster Risk Management, and Emergency Preparedness and Response (**EPR**) systems.

E-BPS has been designed to implement the National Building Code **(NBC)** and Building By-Laws **(BBL)** to promote safe building construction practices and planned urban development. UNDP/CDRMP also aims to strengthen the institutional and legislative aspects of Disaster Risk Management **(DRM)** in Nepal by building the capacities of Ministry of Home Affairs, other Government of Nepal ministries, and local governments across the country.

OBJECTIVE

The main objective of this project is the **Implementation of NBC through E-BPS**, which is achieved through the following:

(i) Develop a customized software system for managing a building permit system based on the NBC and Municipal BBL.

(ii) Digitize and archive the existing 15,000 building plans and drawings in both Kathmandu Municipal City **(KMC)** as well as Lalitpur Sub Metropolitan City **(LSMC)** areas.

(iii) Train KMC and LSMC staff members to implement NBC and their respective Municipal BBL through E-BPS, which will allow them to manage and process building permits and ensure their compliance within the NBC framework.

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(iv) Identify and recommend suitable ICT systems and logistic requirements to KMC and LSMC to ensure business continuity.

(v) Provide software implementation support to ensure a successful installation and a hassle free operational environment.

ELECTRONIC BUILDING PERMIT SYSTEM (E-BPS)

E-BPS is an application software system which has been developed to assist municipalities to improve their current building permit process. It does this by ensuring the effective compliance of the NBC and BBL in urban regions, thus promoting safe building practices and planned urban development for the entire nation. UNDP has currently planned to implement E-BPS in Kathmandu Metropolitan City (**KMC**) and Lalitpur Sub Metropolitan City (**LSMC**). E-BPS is a web-based application through which building permit applications are processed and current building records are maintained. This is an effective and efficient system to monitor and evaluate the current state of building constructions in a municipal area. E-BPS is a distributed system and will be implemented at both the municipal offices as well as their respective ward offices. The system allows citizens to submit as well as track their application(s) and its status respectively over the internet.

E-BPS enables municipalities to manage a building permit system by integrating the NBC and municipal BBL. It supports municipal staff members to maintain a building permit database and ensure NBC and BBL compliance for individual buildings through an intuitive web interface. Municipal staff members with different responsibilities, such as application registration, technical data verification, compliance checking, field verification, certificate printing, handling of legal issues, house address generation, GIS data maintenance, collection of permit fees, assessment of disaster vulnerability, building permit data archiving, executive permit approval, etc. will be able to access the E-BPS through any of the following mediums: LAN, Intranet or Internet.

SALIENT FEATURES OF E-BPS:

(i) Online Registration: An applicant can register and submit a building permit application through the municipality's web portal. Submitting a permit application online is the fastest and easiest method which helps to eliminate many manual hours the municipal staff has to devote in entering the same information for the permit process. The required information to apply for a building permit, i.e. information about BBL and NBC, checklist to apply for building permit, information about Municipality's registered designers and trained Masons, etc are available online.

(ii) Tracking Permit Status: The system updates the permit status of each application. Applicants may track their building permit status online by logging onto their Municipality's website through their Municipality's web portal. This reduces (almost eliminates) the number of calls or visits an applicant has to make to their municipality office to query about their permit application status.

(iii) Management of Building Permit Application: The system manages building permit applications which includes (but not limited to) the following documents: House and Land Ownership, Construction Site, Neighboring Land Parcels (plots), Building Plan and Drawings, Design Data required for BBL and NBC compliance, Citizenship certificate, Land ownership certificate, etc. and any other specific municipality requirements.

(iv) Compliance Checking: Compliance checking for BBL and NBC is one of the most complex and time consuming tasks in E-BPS. E-BPS has an automated feature for checking against Building Bye-laws and NBC compliance and is one of the most important features of the system. The system verifies the data and information provided by the building designer against the system standards defined by the Municipality. This feature helps Municipalities to speed up the permit process and also helps to identify buildings that do not comply with its current standard. This feature can eventually also be integrated as a key component of any future Disaster Risk Management System.

(v) Archiving Building Permit Data: This system enables municipalities to archive existing building drawings/plans and related documents. It has the capability of storing, retrieving and managing electronic AutoCAD and/or other image/PDF file formats of building drawings. E-BPS also has a capability to scan and store maps and documents with its built-in hardware support.

(vi) GIS/Addressing Support: E-BPS enables Municipalities to integrate building data with a GIS based building database and thus enables them in assigning a House Address for new buildings.

SYSTEM PROCESS AND WORK DESK

E-BPS has implemented the concept of work desk for processing building permit application and maintaining permit database such as Registration Desk for general data entry and verification, Technical Desk for design data entry and verification, Technical Desk for compliance checking, Field Desk for maintaining field report about field verification and monitoring of construction work, Ward Desk for maintaining field report and neighborhood information, Revenue Desk for processing permit fee and property evaluation, Legal Desk for processing and maintaining litigation data, GIS/Addressing Desk for maintain house address data and data to integrate Municipal GIS, Vulnerability Assessment Desk for maintaining exposure data for Seismic Risk Assessment, Archival Desk for managing archives of permit documents, and Executive Desk for approval of building permit & certification and standard settings.

WAY FORWARD:

After the execution of the E-BPS all the new buildings in KMC and LSMC are completely code compliant, however there are still much to be done for the existing buildings.

In the scope of present activity, it has been proposed to have the database of 15,000 existing building stocks in both the municipalities. There are more than 200,000 buildings and they all need to be in the inventory of municipalities for having risk assessment and mitigation purpose. Hence, the archival process of existing buildings needs to be prioritized in the annual plan of each municipality.

Similarly, in this activity, it has been proposed to have the coordinates of 600 existing buildings including their exposure data and keep them in the GIS interface of the city maps. To keep the updated Geo referenced database of new and remaining existing buildings, the municipalities must take the initiatives to accomplish them through their own efforts.

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