Construction Permits in Pakistan

Recommendations for Regulatory improvements based upon International Best Practice

December 2016

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DISCLAIMER

The following information is recommendations and commentary regarding the draft Model Building and Zoning Bye Laws for Lahore and Punjab, Pakistan. The recommendations are based upon International Best Practice for building and construction permitting reforms.

We have not verified independently the accuracy of information provided to us, and have not conducted any form of audit in respect of the supplier organisations. Accordingly, we express no opinion on the reliability, accuracy, or completeness of the information provided to us and upon which we have relied.

The statements and opinions expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.

ACKNOWLEDGEMENTS

This paper refers to research from various quarters including;

- Good Practices for Construction Regulation and Enforcement Reform, January 2013: A World Bank publication.1
- Strengths and Weaknesses of the New Zealand Building Control Regulatory System and Recommendations for Reform: A Strategic Assessment: Meacham Associates, 2009
- Allen and Clarke, Policy and regulatory specialists, New Zealand
- CRC for Construction Innovation, 2007
- Productivity In The Building Network: Assessing the Impacts of Building Information Models, The Allen Consulting Group, 2010
- http://www.building.co.uk/
- http://www.buildingsmart.org/
- www.ym.fi/
- http://eng.mst.dk/
- http://www.epa.govt.nz
- https://www.gov.uk/

[1] Good Practices for Construction Regulation and Enforcement Reform", January 2013
https://www.wbginvestmentclimate.org/publications/loader.cfm?csModule=security/getfile&pageid=33965

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EXECUTIVE SUMMARY

The scope for this paper was to provide an analysis of the draft Model Building and Zoning Bye Laws for Lahore and Punjab, Pakistan. The report provides observations and recommendations based upon international best practices in the Building and Construction Permitting System regarding ways to enhance the proposed regulations and sets out options for more far-reaching reforms that warrant further consideration.

For those areas where more substantive reform is recommended, examples of similar reforms that have been implemented successfully internationally are provided. Key enablers/pre-conditions for successful international reforms are noted and, conversely, where such reforms have failed, the key lessons learnt are identified that may have relevance for Pakistan.

1.1 RECOMMENDATIONS

REC #	RECOMMENDATION
1	**State Building and Urban planning Regulatory framework: State legislation and supporting local government regulations *(New)*** Consideration should be given to developing two distinct regulatory systems (a) Land use including environmental protection (b) Building and construction including the building code requirements and construction permitting obligations.
2	**Regulations reference: 7.1 design: *(Replace)*** It is strongly recommended that (a) any reference to the Unified Building Code (UBC) is removed and (b) the only Building Code referenced would be the 2015 International Building Code (IBC).
3	**Regulations reference: 7.1 design: *(Replace)*** It is recommended that the compulsory adoption of the most up to date International seismic building codes for all buildings designed and constructed in Pakistan.
4	**Regulations reference: Section (Ideally located alongside seismic engineering) *(New)*** It is recommended that Pakistan develop an Earthquake Prone Building policy. The policy should outline the governments intended approach to: • identifying earthquake-prone buildings • the extent to which, legislation permitting, earthquake-prone buildings meet national standards • the government's priorities for upgrading earthquake-prone buildings • working with owners to upgrade their buildings • managing buildings considered to be dangerous or insanitary • managing heritage buildings that may be earthquake-prone, dangerous and insanitary
5	**Regulations reference: Chapter - 10 building plan sanctioning & controlling authority *(New)*** Develop and implement stepped, risk-based building permit system where the amount of plan checking and inspection is aligned with the risk and complexity of the work, and the skills and capability of the people doing the work. Technical staff are only allocated work that is confirmed to be within their competency, or if in training must be validated by an appropriately competent person.

	A risk based classification helps free up the permitting agencies limited building control resources. It enables the agencies to focus on the more complicated, higher risk work, where a project management approach should exist.
6	**Regulations reference: Section (10.2) Application for Building Works *(New)*** Ensure the building categories demarcations are described clearly and in plain language as to avoid confusion as to the appropriate category for the proposed building project. This aligns to the complexity of the building project.
7	**Regulations reference: Section (10.2) Application for Building Works *(New)*** Develop a system to accommodate Staged Building Permit applications. For the proposed classification, Commercial Class 2 & 3, it could be appropriate to provide the availability for a staged permit process. This would enable the permit application to be split up into a series of building permit applications.
8	**Regulations reference: 10.1 General *(New sub-section)*** Ensure easy to understand, technically correct public/consumer/stakeholder information and guidance detailing the nature and quality of information/documents that are required to submit a building and construction permit is available. Ensure that this public, consumer, stakeholder information and guidance material is available in complimentary printed and electronic formats. Examples of public information is provided in 4.3.2.
9	**Regulations reference: 10.3 Submission of plans and documents *(New sub-section)*** Develop and make widely available via various means of media including printed and electronic a building permit submission checklist and application guidance. This would communicate how the building permit application process is conducted, who has what responsibilities and what is the correct/quality information required for building permit applications to be submitted by the applicant.
10	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Develop and implement an Online Permit application web portal and digital processing system. The system enables the tracking of the progression of a building permit application through the assessment and approval system. It is important to provide a transparent system when dealing with acceptance, assessment and approval of permit applications.
11	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Review, confirm or amend the records and archive law to allow for the acceptance of digital signatures that have been security stamped (i.e. verified as original) this would assist the move to accepting completely digitised permit applications.
12	**Regulations reference: 10.1 General *(New sub-section)*** Introducing a system for pre-application meetings. Early discussions with the permit application agencies helps applicants to make informed decisions about the application and avoid unnecessary processing delays. This pre-application process would be a joint initiative between Building Control and Town Planning, as many applications are identified during the Town Planning application process.
13	**Regulations reference: 10.3.4 Vetting of Structural drawing of multi-story and buildings of public assembly *(New sub-section)***

	Implementing within the permit processing system the ability to allow for "requests for further information" to be sent to applicants at any stage of the evaluation process in order for the applicant to address the issue in the most expedient manner.
14	**Regulations reference: 10.8.1 inspection of buildings *(New sub-section)***
	Develop and implement different approval pathways when distinguishing between minor and major changes identified during construction, to what was originally permitted to enable the amendments to be approved in an efficient fashion.
15	**National initiative *(New)***
	Develop and implement a plan to raise significantly the quality of permit applications from architects and designers, including the addition of guidance material for the preparation of quality consent applications in the curriculum of any Pakistan based sector training organisation. Engage with the government to seek assistance in preparation of educational material and delivery of appropriate training to the sector**.**
16	**Regulations reference: Chapter - 10 building plan sanctioning & controlling authority *(New)***
	Develop a system that rewards "quality" permits applications with reduced processing times and reduced fees as a result, rather than a system that potentially encourages the practice of reduced quality applications.
17	**Regulations reference: 10.3.4 Vetting of Structural Drawing of Multi-story and Buildings of Public use *(New)***
	Adopt a peer review process for the verification of complex elements designed by professionals where elements are of a new design, of a complex nature or are used in the design of structures with significant public occupancy such as stadiums, malls, hotels, and hospitals etc. The municipalities would be able to accept the technical validity of the peer review, without any further technical processing, providing the authors of the peer review were registered professionals with the appropriate qualifications, competence and experience commensurate to the complexity of the project.
18	**Operational delivery process *(New)***
	To prevent overlap and ensure deficiency, it is recommended to consider opting to create a "Virtual" One Stop Shop or Single Window where applicants can submit all the required documentation for the building permit. This OSS would improve the organisation of the review process— not by reducing the number of checks needed but by better coordinating the efforts of different agencies. That way, more resources can be devoted to safety checks rather than to paperwork. The "Virtual" OSS would be possible with the introduction of a digital permitting web portal.
19	**Regulations reference: 10.8.1 inspection of Buildings *(Replace)***
	Introduce appropriate construction verification inspections based upon size, complexity and risk of the project, and the critical construction processes.
20	**Regulations reference: 10.8.1 inspection of Buildings *(New)***
	Implement a system where Licensed Engineers and Architects perform inspections on complex portions of work and provide a signed Declaration of Compliance.
21	**State statutory requirement and implemented by design, building and construction professional**

	bodies *(New)*
	Create mandatory professional standards based on the compliance strategy chosen by Pakistan (see, for example, the U.K. model and the Austrian and German model. Many countries blend mandatory professional licensing for larger and more complex buildings with a more open system covering smaller, less complex buildings. In best-practice countries, having a project designed by an architect or engineer is not the only check on safety. Building designs are still reviewed by a third party, and construction is still subject to inspections. A building design carried out by a designer, however, is less likely to have a defective design and so is more likely to lead to a safe building.
22	**State statutory requirement and implemented by design, building and construction professional bodies *(New)***
	Problems with professional licensing bodies usually relate to a conflict of interest. The association seeks to improve its image and serve its members and therefore avoids disciplinary actions against members that may bring unwanted attention to the profession. Typical problems include inadequate qualification requirements and, more frequently, inadequate discipline, allowing incompetent or negligent practitioners to continue to practice regardless of their track records. Once diagnosed, the problem admits of the following remedies: • Modify the governance structure of the licensing body so that the majority of directors are not professional practitioners, or at least increase the representation of non-practitioners or other stakeholders to better represent the public interest • Improve government oversight of the governance body • Introduce more robust insurance requirements, peer review, and continuing professional training.
23	**Operational delivery process *(New)***
	Introduce a Building and Construction Stakeholders Customer Advisory Group as an active participant in the development of policies and procedures directly affecting the building and construction industry and implement regular bi-monthly meetings between the municipality and the Stakeholders representative group. Stakeholders could further enhance the relationship by being invited to participate on municipality project groups established to improve building control processes and consistency of technical decisions.
24	**Operational delivery process *(New)***
	Develop and implement appropriate consumer monitoring activities to ascertain the performance of the building control process and group from building permit applicants who represent homeowners and professionals.
25	**Regulations reference: chapter – 9 roles and responsibilities *(Review)***
	Delineate roles and responsibilities of key parties, including the building owner, designer, manufacturers, contractors, inspectors, and any private inspection agencies. This can be done through legislation, regulation, or interpretive guidelines. Clarifying the roles and responsibilities of all parties will help to ensure that all parties and practitioners recognize that building safety and compliance with building codes are a shared responsibility.
26	**State statutory requirement: State legislation and supporting local government regulations *(New)***
	Extend liability to the permitting agency. In good-practice jurisdictions, building permitting agencies are liable for acts of both omission and commission. In other words, permitting agencies should be liable for what they do as well as for what they fail to do. In common-law countries, case law has established that once a permitting system is created, the permitting body has a duty of care to all

	persons, not just to the building owner.
27	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Extend liability to additional practitioners, such as contractors and small building designers.
28	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Require certain key practitioners to carry liability insurance. In many good-practice jurisdictions, professional designers such as architects and engineers are required by their professional associations to carry liability insurance, with the extent of coverage determined by building type. The challenge for policy makers is to avoid creating barriers to entry for smaller and new entrants into the design or construction business while avoiding unfair competition between responsible firms that obtain insurance and firms unable or unwilling to obtain coverage and that can thus operate at lower cost.
29	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Consider developing a Product Certification scheme. Product certification is designed to streamline and speed up the building permit and inspection process, and to avoid repeated assessment of the same products. The product certificate would state information and conditions on specifying and installing the building product or construction method to ensure that it complies with the Building Code**.**
30	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Senior regulating agencies must provide interpretations of technical and administrative provisions. The level of government that developed the legislative and regulatory articles should provide interpretations regarding their intent. Interpretation of legislative and regulatory articles can be nonbinding and offered to practitioners or enforcement agencies on an informal basis. Interpretations can also be binding, in which case a more rigorous development process may be used, with the results equally binding on the permitting authority.
31	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Establish a commission of experts to make rulings on building innovations. An independent commission composed of experts in several technical fields should be empowered to make rulings on whether a particular innovative or alternative building system, material, or design complies with the objectives and performance levels defined in the building code.
32	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Establish an independent, quasi-judicial dispute-resolution body. A quasi-judicial body that can make binding decisions within its area of expertise should be established to deal with disputes between practitioners and permitting authorities on matters related to the interpretation of building codes or the sufficiency of compliance.
33	**Regulations reference: Section 1.0 *(New)*** Assign core planning and zoning responsibilities to local authorities. Planning approval should be decentralized to the extent possible to improve efficiency, accountability, and coordination with building permit approvals. Local municipalities and their residents are most directly affected by land-use decisions: they are always in a better position to evaluate the impact of development proposals on infrastructure, the community, and the local tax base. Senior level (or state) governments have a more natural role in policy issues that cut across municipal boundaries. This includes major transportation, transit, infrastructure, investment, or broad impact issues.

34	**Regulations reference: Section 1.0 *(New)*** Enforce periodical planning update cycles, such as every 5 to 10 years, involving local stakeholders and systematic public consultations. Updating city master plans and zoning requirements is essential to avoid the development of excess discretion in individual planning permits. An updated zoning plan should create a straightforward and predetermined "right to build" when a building project is in compliance with zoning requirements.
35	**Regulations reference: Section 1.0 *(New)*** Ensure full disclosure of planning information and public consultations. In countries transitioning from a command-and-control to a market economy and with only a recent history of embracing private land ownership, full disclosure of planning information is not always widely accepted. Establishing web-based, detailed land-use plans, such as those used in Vienna, remains the most effective measure for ensuring high standards of transparency.
36	**State statutory requirement: State legislation and supporting local government regulations *(New)*** Ensure that any developments in permit application digitisation are compatible with any e-governance initiatives.
37	**State policy investigation and long term planning *(New)*** The Government of Pakistan should establish some familiarity with the Building Information Modelling (BIM) systems. Begin discussions with your IT department and bring their attention to the issue. Explore the availability of BIM Viewers such as Solibri Model Checker, which are much like a PDF viewers, which allows users (i.e. Building Control departments) the ability to view BIM files while not altering the BIM file content**.**
38	**State policy investigation and long term planning *(New)*** The Government of Pakistan should set National BIM Interoperability Standards interoperable standards based on Industry Foundation Class (IFC) and City Geography Markup Language (GML) relevant Open Geospatial Consortium (OGC) and ISO standards for geospatial data and related services.

2 OBJECTIVE

Pakistan is aiming to reform and improve the Model Building and Zoning Bye Laws and streamline procedures which will improve the quality of its construction permitting system. This paper provides options for consideration relating to Construction Permitting regulatory reform. These options are based upon International Best Practice.

2.1 PAPER FRAMEWORK

To provide a reference framework for the paper, the paper uses the model outline provided by the Investment Climate Department of the World Bank. This model summarises how a building permit process should operate based on international best practice and suggests what reforms may be suitable for countries making adjustments to their systems (refer figure 1).

The core elements of the framework consist of the following:

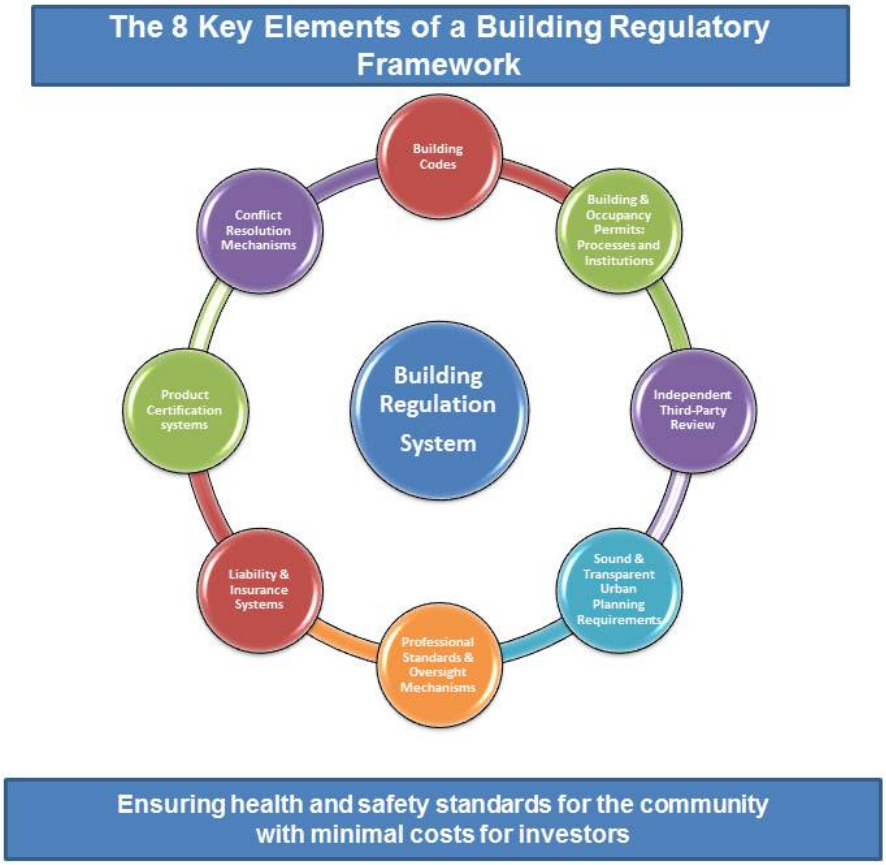
- A Building Code, which includes reference standards and related documents
- A building permitting process
- A mechanism for independent third party review (meaning review by someone other than the designer/contractor and who is technically competent to conduct such peer reviews)
- Sound and transparent urban planning requirements
- Appropriate professional standards (e.g. licensing and accreditation)
- Building product certification system (testing and approval of building construction products)
- An effective liability and insurance regime
- Suitable interpretations, dispute, appeals, and audit mechanisms.

2.2 TYPICAL REFORM SEQUENCE

Initiating reform and addressing typical challenges based on common observations made in reforming countries examined produces a typical sequence of engagement which runs as follows:

- Consultation with key stakeholders to identify actual problems and information sources
- Prioritization of key issues
- Development of a reform strategy
- Consultation with key stakeholders on the proposed reform strategy
- Training and information seminars with key stakeholder groups
- Establishment of a range of pilot projects to test and improve the reform proposals
- Implementation of key reform proposals
- Ongoing communication with and training of key stakeholders to facilitate implementation and provide continuous feedback.

FIGURE 1: THE 8 KEY ELEMENTS OF BUILDING REGULATORY FRAMEWORK2



When combined, these elements can support an effective and efficient system for issuing building permits, while balancing the costs to developers and investors without compromising fundamental health and safety outcomes for building users.

[2] Good Practices for Construction Regulation and Enforcement Reform", January 2013
https://www.wbginvestmentclimate.org/publications/loader.cfm?csModule=security/getfile&pageid=33965

3 LAND DEVELOPMENT AND BUILDING LEGISLATION

The proposed Land Development Regulations as provided for the basis of this review currently cover both land use and building and construction requirements.

It is acknowledged, that these two sets of regulatory criteria are generally considered to be related and in many territories can be addressed either concurrently or in parallel. However, in best practice jurisdictions, the legislative framework surrounding the land use and building legislations is generally separated out into two standalone legislative frameworks. One specifically for land use including environmental protection and another for the building and construction including the building code requirements and construction permitting obligations.

Examples of countries where Land use and Building and Construction legislation is separate.

Country	Legislation web link
New Zealand	
Land Use Regulations	http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html
Building and Construction Regulations	http://www.legislation.govt.nz/act/public/2004/0072/latest/DLM306036.html
Canada	
Land Use Regulations	http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1524/
Building and Construction Regulations	http://nslegislature.ca/legc/statutes/buildcod.htm
Sweden	
Land Use Regulations	http://www.government.se/contentassets/be5e4d4ebdb4499f8d6365720ae68724/the-swedish-environmental-code-ds-200061
Building and Construction Regulations	http://www.boverket.se/en/start-in-english/building-regulations/national-regulations/
United Kingdom	
Land Use Regulations	http://www.legislation.gov.uk/uksi/2015/596/made
Building and Construction Regulations	https://www.gov.uk/government/policies/building-regulation
Australia	
Land Use Regulations	http://www.dpi.nsw.gov.au/content/environment/landuse-planning
Building and Construction	http://www.abcb.gov.au/

Regulations

RECOMMENDATION 1

Consideration should be given to developing two distinct regulatory systems (a) Land use including environmental protection (b) Building and construction including the building code requirements and construction permitting obligations.

STATE BUILDING AND URBAN PLANNING REGULATORY FRAMEWORK: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

This recommendation would apply to the State Building and Urban planning Regulatory framework. Implementation of the policies and practices is traditionally delegated to Local Government.

4 Building Codes

4.1 Definition and Scope

Building Codes provide a set of uniform building requirements and standards, which set out acceptance levels of health and safety in buildings. Usually a building code is mandatory and all practitioners must comply with its requirements.

4.2 Why Building Codes Are Important

All building professionals, developers and investors should have a single point of reference that establishes common and transparent standards for public health, safety, fire protection, structural efficiency and environmental integrity. Without a building code, significant disconnects can arise between the design professionals and regulators. In the absence of common references, builders do not know what to expect and the permitting process cannot be straightforward and transparent. Where a national or subnational jurisdiction fails to present a comprehensive set of building standards and requirements in the form of a uniform building code, development of an efficient risk-based regulatory system can be impeded. Countries with no building code at all expose themselves to higher risks of exposure to substandard construction and massive loss of human lives and infrastructure[3].

Building codes are leveraged as key risk management tools. Good-practice codes impose different technical requirements for buildings depending on structural characteristics and occupancy and geographic and geologic constraints. The process of categorising building is called *classification*, and its purpose is to determine the degree and intensity of regulatory controls necessary according to the class of risk into which the building falls.

[3] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

It is acknowledged that the draft Regulations Section 7.1 refers to the Uniform Building Code (UBC) 1997 and the International Building Code (IBC) 2006. The UBC was replaced in 2000 by the new International Building Code (IBC) published by the International Code Council (ICC).

The latest edition of the IBC was published in 2015. Although some developing nations still use the UBC, it has not been updated since 1997 and will not take into account the latest building science or Code requirements. Best practise would suggest a strategic movement to adopt the IBC and remove reference to the obsolete UBC. The current proposed Regulations make reference to both the UBC and IBC, this will be confusing and would possibly lead to inappropriate technical decision being made.

RECOMMENDATION 2

It is strongly recommended that (a) any reference to the Unified Building Code (UBC) is removed and (b) the only Building Code referenced would be the 2015 International Building Code (IBC).

REGULATIONS REFERENCE: 7.1 DESIGN: (REPLACE)

Reference to Building Codes exist within Section 7.1 Design. The Section would require updating, references to the Unified Building Code (UBC) removed and only the International Building Code (IBC) referenced.

4.3 International Best Practice

4.3.1 International Seismic Building Codes

Pakistan has significant seismic activity, and the risk of earthquakes is ever present. There needs to be a clear understanding of the responsibilities and tasks associated with earthquake protection for buildings. Section 7.1.1 refers to the applicable code UBC 1997 for resisting earthquake forces. This code has been superseded by the International Building Code: Seismic Design Categories.

RECOMMENDATION 3

It is recommended that the compulsory adoption of the most up to date International seismic building codes for all buildings designed and constructed in Pakistan.

REGULATIONS REFERENCE: 7.1 DESIGN (REPLACE)

Update sections:

7.1.1 Earthquake Resistant Design (a)
7.1.3 Compliance to Design Codes (a)(I, ii)

4.3.2 Earthquake Prone Buildings

The risk of earthquake-prone buildings in Pakistan, can be measured by comparing the assessed performance of each building to the performance required of a new building. A key factor for Municipalities in determining their policy for earthquake-prone buildings within their urban plan is likely to be the level of earthquake risk in their area: what is the probability and severity of earthquakes and

what impact could they have on life and property. These can be generally extracted from the country's Earthquake Zone Map. The policy would become a vital tool in ensuring the structural integrity of the country's commercial building stock, including special heritage buildings.

RECOMMENDATION 4

It is recommended that Pakistan develop an Earthquake Prone Building policy. The policy should outline the governments intended approach to:

- identifying earthquake-prone buildings
- the extent to which, legislation permitting, earthquake-prone buildings meet national standards
- the government's priorities for upgrading earthquake-prone buildings
- working with owners to upgrade their buildings
- managing buildings considered to be dangerous or insanitary
- managing heritage buildings that may be earthquake-prone, dangerous and insanitary

REGULATIONS REFERENCE: NEW SECTION (IDEALLY LOCATED ALONGSIDE SEISMIC ENGINEERING)

It is recommended that a new section be established concerning the review and management of buildings that have been assessed as earthquake prone (Ideally located alongside and related to section pertaining to Seismic Engineering).

4.4 International Building Complexity Classifications

4.4.1 A risk-based building classifications system

In many jurisdictions the permitting assessment systems do not account for a building's risk characteristics and takes only modest note of the quality of an application. All permit applications, regardless of design complexity, risk characteristics, or the skills and experience of the professional applicant/practitioner, are generally assessed through a single channel (local municipality). Little provision is made to align qualified, skilled, competent, and experienced building design and construction practitioners with "scopes" of work planned.

Developing a risk-based building classification system, would address the time pressures faced by the municipality review team when substandard applications are submitted for plan assessment. Increased technical vetting of applications at the acceptance stage, would also improve processing time at the later stages.

Clearly, risk assessment is not a one-off or isolated effort but a package of inter-related systemic elements, including building classification, third-party checks, and practitioner qualifications and experience, and many others.

4.4.2 Rationale for a Risk-Based Management System

A risk-based management system provides a number of benefits, among them:

- A streamlined approach to the permitting process achieved by proactively working in a collegiate fashion to ensure essential design characteristics are managed before the permit is applied;
- Risk, responsibility, and liability shifted to the design sector for its specific work products, for which they have the requisite skills, competencies, and experience;

- Risk to the municipality limited to those elements of the permit application and the specific decisions for which it has the skills and competencies needed; and
- Permitting officials' time freed up time to focus limited building-control resources where they will do the most good: on complicated, high-risk work that benefits from oversight by a project management team.

The central government, in collaboration with the construction sector, should develop processes and templates to aid permit participants—municipalities, designers, engineers, constructors, and so on—in risk profiling and permit processing. Legislation or appropriate regulation would clearly set the framework for a risk-based building classification system in which the degree of plan checking and inspection aligns with the risk and complexity of the work at hand and with the skills and capability of the people doing the work.

4.4.3 Common international themes surrounding Risk Based Permitting system

- Not all building projects are associated with the same social, cultural, economic or environmental risks.
- Efficient governments have implemented rigorous yet differentiated construction permitting processes to treat buildings according to their risk level and location.
- Simple or low-risk buildings require less documentation than more complex structures and can be approved faster.
- Worldwide, the main criteria used to classify a construction project by its potential risk are based on the building's use, location and size. In 2015, the World Bank Doing Business Report recorded 88 economies as having a risk-differentiated approach.
- A risk-based system identifies where the risks are, the likelihood of the risks and the consequences should a failure occur. Controls are then focused on the high-risk areas.
- Typically segmented into:
    - Residential
    - Commercial
- Classified use or activity taken from the Countries Building Regulations/Building Code (e.g., Residential, commercial, industrial, outbuildings)
- Building type (e.g. garage, dwelling, school, office, etc.)
- Specific construction standards (e.g. structural importance, external moisture protection)
- Complexity of design
- Life safety (risk of injury to user)
- Intended outcome.
- Within occupancy classes, risks vary depending on the size of the building. In some jurisdictions, buildings over 3 stories and 600 square meters in building area are generally subject to more robust requirements.
- Still more robust requirements often apply to buildings over about 18 to 20 meters in height, higher than the reach of most fire ladders.
- A further escalation of requirements applies to buildings considered "post-disaster" buildings, such as hospitals, police stations, and power plants
- May have mandated plan assessment days attributed to different classes e.g.:
    - Low risk residential: 10 days
    - Complex residential: 20 days

- Low risk commercial (non-structural): 5 days
- Medium risk commercial: 10 days
- Complex commercial /industrial: 20 days

RECOMMENDATION 5

Develop and implement stepped, risk-based building permit system and regulations framework, where the amount of plan checking and inspection is aligned with the risk and complexity of the work, and the skills and capability of the people doing the work. Technical staff are only allocated work that is confirmed to be within their competency, or if in training must be validated by an appropriately competent person.

A risk based classification system helps free up the permitting agencies limited building control resources. It enables the agencies to focus on the more complicated, higher risk work, where a project management approach should exist.

REGULATIONS REF: CHAPTER - 10 BUILDING PLAN SANCTIONING & CONTROLLING AUTHORITY (NEW)

Stepped, risk-based permitting systems would be a new way of applying, assessing and approving a building permit. Its process and fundamental polices would apply to the entire "Building Plan Sanctioning & Controlling Authority systems and processes. The fundamental steps would remain e.g. applying for a permit, assessing the plan application, approving the permit and carrying out inspections during construction. However, a risk-based approach would be adopted to each of the decision steps.

4.4.4 Building Classification Processing Channels

Municipalities often adopt a first-in-first served approach to programming the work entering their system. The implementation of a building classification system allows the development of building application and processing "channels." Streamlined review and processing channels can be dedicated to assessing specific classifications of permit applications. This will increase the efficiency of the application review because applications will be submitted by professionals with the appropriate competence and experience, in turn increasing municipality officials' confidence in the work of those professionals. Specific processes can also be aligned to reflect different building classifications, making the processes even more efficient.

Concise, plainly written information for the public will further aid in the development and implementation of an improved, risk-based system.

It is possible to consider, as other jurisdictions have done, applying different statutory processing times for different categories of buildings.

The table below outlines a proposed building classification based on current international construction practices. The content considers varying degrees of vulnerability to chronic and exceptional risks.

Proposed Risk-Based Classification for Buildings

Risk-Based Building Classification	Build Type Description
Low-Risk Exempt Building Work	Low-risk work presents little danger to people or property, and the compliance costs associated with permitting such work are not offset by the benefits obtained from the permit process. Examples include: • Poultry house not exceeding 10m2 in area • Aviary not exceeding 20m2 in area • Solid fuel store not exceeding 10m2 in area and 2m in height • Tool shed not exceeding 10m2 in area • Child's playhouse not exceeding 5m2 in area • Cycle shed not exceeding 5m2 in area • Greenhouse not exceeding 15m2 in area • Open-sided car, caravan or boat shelter or a carport where such shelter or carport does not exceed 40m2 in area • Any pergola • The replacement of a roof or part thereof with the same or similar material • The erection of any solar water heater not exceeding 6m2 **Important note**: Even if building work does not require a building permit, it should still be a requirement of the building legislation that all building work must comply with the Building Code and Regulations. For this reason, skilled building practitioners will often need to be engaged to carry out the work.
Residential Class 1	Detached dwellings designed to a common standard that are less than or equal to two stories on plots up to 100 sq.m. to be used as one- or two-family private dwellings.
Residential Class 2	Detached dwellings designed to a common standard that are more than two but less than six stories, with a commercial ground floor (e.g., retail or office space), that may be used for: • Multiple one- or two-family private dwellings • Lodging or rooming houses • Dormitories • Apartment houses (flats)
Commercial Class 1	Commercial, industrial, institutional, and communal non-residential buildings and their associated outbuildings and ancillary buildings equal to or less than two stories and with an occupancy load of equal to or fewer than 100 people.
Commercial Class 2	Commercial, industrial, communal residential, and communal non-residential buildings equal to or less than four stories and with an occupancy load of more than

	100 and equal to or fewer than 500 people.
Commercial Class 3	Commercial, industrial, communal residential, and communal non-residential buildings that exceed the occupancy limits or number of stories of Commercial Classes 1 and 2. Examples include: • Hospitals and sanatoria • Custodial institutions • Penal and mental institutions • Theaters • Buildings containing hazardous substances and/or processes • Grandstands accommodating more than 5,000 spectators

RECOMMENDATION 6

Ensure the building categories demarcations are described clearly and in plain language as to avoid confusion as to the appropriate category for the proposed building project. This aligns to the complexity of the building project.

REGULATIONS REFERENCE: 10.2 APPLICATION FOR BUILDING WORKS (NEW)

It is recommended that this section be expanded to accommodate the proposed Risk-Based Building Classifications.

4.4.5 Staged Building Permits

For complex projects that would fall into the proposed classification, Commercial Class 2 & 3, it could be appropriate to provide the availability for a staged permit process. This would enable the permit application to be split up into a series of building permit applications. This may be useful where the scope of the work can be clearly defined in each case. For example:

- Large multi-storey buildings
- Multi-unit apartments or development blocks
- Large public buildings such as shopping malls and hospitals
- Site works, foundations and drainage, with the balance of work completed under a separate stage (this situation might occur where it is desirable to start the project early but where plans and calculations have not been completed for the balance of the work).

In these situations, it may take some time to complete the entire project, but it may not be practicable or desirable to wait for all work to be completed for final payment or occupation.

RECOMMENDATION 7

Develop a system to accommodate Staged Building Permit applications. For the proposed

classification, Commercial Class 2 & 3, it could be appropriate to provide the availability for a staged permit process. This would enable the permit application to be split up into a series of building permit applications.

REGULATIONS REFERENCE: 10.2 APPLICATION FOR BUILDING WORKS (NEW)

It is recommended that this would be a new section following section 10.2. Permit applications of a significant size or complex nature may be submitted in stages to allow for staged construction.

5 BUILDING OCCUPANCY PERMITS: PROCESSES AND INSTITUTIONS

5.1 DEFINITION AND SCOPE

For investors, one of the most difficult elements of starting a business is often to build commercial or production facilities. The building permit process refers to the process of obtaining a building permit and associated requirements. The building permit authority acts as a gatekeeper, ensuring that permits are issued only when applicants comply with other "applicable laws" including prior clearance and requirements such as land-use planning regulations; regulations concerning airports, farmland and heritage site and environmental regulations.

Beyond the construction logistics, many administrative rules and requirements by the public authorities are imposed on investors. While there is often sound policy justification for these rules, there are sometimes cases where this is not so or where those regulated either do not understand the rationale for the rules or think it is overly bureaucratic. Precious time and money can be expended because of overly complex procedures, imposed interactions with an excessive number of authorities, and unclear and discretionary procedures.

5.2 WHY THE PERMITTING PROCESSES ARE IMPORTANT

Delays in obtaining a building permit particularly with planning approvals, can create adverse effects on a building project and can lead to developers to abandon otherwise viable investments. In many jurisdictions across the world, builders may choose to bribe building officials for a 'fast track' permit or may resort to building informally. These practices can lead to poor compliance with standards and increased risk for the community.

The lack of transparency and accountability from building from building authorities can contribute to market distortions and additional transactions costs, especially when these authorities are under equipped, under resourced and not guided by basic standards of service delivery. Lengthy or obscure permitting processes can have a negative effect on developers in another way, they may hamper innovative projects that are more likely than traditional ones to face uncertainties and delays[4].

[4] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

5.3 INTERNATIONAL BEST PRACTICE

5.3.1 Public Information about the Building Permit Requirements

It is important to ensure applicants provide complete and accurate permit applications. Providing the list of permitting procedures ensures construction permit applicants have a clear view of the requirements.

However, requirements are generally written in legal (policy) terms and the construction sector will quite often have difficulty translating this policy language into readily understandable language. In many countries, it has become a standard practice for regulatory agencies to provide construction permit applicants with comprehensive and easy to understand advice and guidance, drafted in plain language.

This practice will ensure that applicants are in the best position to provide "quality" relevant and technically appropriate permit application information.

Information should be available in multiple media formats e.g. online via dedicated web pages, hard copy guidance and advice brochures available from application centres. Holding regular information seminars is another common means that other jurisdictions use to provide applicants the opportunity to learn first-hand and ask questions from permitting authorities. This will ensure best possible access to information to all interested parties.

5.3.2 Suggestions for Scope of Public information

The following headings are suggestions on the type of information that would benefit greatly the applicants before applying for a building permit.

Before you build

- Building permit process overview

Applying for Building Permit

- Preparing an application
- Submitting your application
- Pre-acceptance technical check
- Processing clock
- Verifying your application against compliance with the Building Regulations
- Involvement of other parties

Processing your building permit application

- Processing and approving your application
- Tracking your application
- Building permit conditions
- Granting your building permit
- Issuing your building permit
- Building permit documentation
- How long is your building permit valid for

Inspections

- Building permit inspection documentation
- Types of inspections

- Booking an inspection
- Submitting construction documentation

Final approvals

- Occupancy Certificates

Building Permit Forms and Guides

Fees and Charges

RECOMMENDATION 8

Ensure easy to understand, technically correct public/consumer/stakeholder information and guidance detailing the nature and quality of information/documents that are required to submit a building and construction permit is available. Ensure that this public, consumer, stakeholder information and guidance material is available in complimentary printed and electronic formats. Examples of public information is provided in 5.3.2.

REGULATIONS REF: 10.1 GENERAL (NEW SUB-SECTION)

It is recommended that requiring the permitting agency to make available the above information and guidance material will have a significant improvement on the quality and consistency of building permit applications.

5.3.3 Building permit submission checklist

A building permit submission checklist, is a tool commonly used internationally to communicate the minimum information required for building permit applications to the applicant. Such information sets out what information the various permit processing organisations require in order to accept and process a building permit application. The checklist should be at the very front of the permit application and include any declaration by the applicant that all the required material and evidence is included and that it is technically correct. A checklist will reduce the number of applications declined due to insufficient or inappropriate information.

This will provide the right environment for “quality” and complete building permit applications to be submitted. The higher the degree of quality the application demonstrates the less time it will take the plan evaluator to assess for compliance. Thus providing the environment to significantly reduce the overall processing time for permit applications and ultimately speeds up the entire process.

RECOMMENDATION 9

Develop and make widely available via various means of media including printed and electronic a building permit submission checklist and application guidance. This would communicate how the building permit application process is conducted, who has what responsibilities and what is the correct/quality information required for building permit applications to be submitted by the applicant.

REGULATIONS REFERENCE: 10.3 SUBMISSION OF PLANS AND DOCUMENTS (NEW SUB-SECTION)

It is recommended that at the beginning of section 10.3.2 (Documents) that there is a requirement to submit a completed building permit submission checklist.

5.3.4 Online permitting

Online Permitting systems allow centralised, paperless, internet based means of receiving, and processing building permit applications. The system would enable the tracking of the progression of a building permit application through the assessment and approval process and provide transparency of process and decisions. It is important that any system development is constructed to ensure that all data must conform to **interoperable** standards based on Industry Foundation Class (IFC) and City Geography Markup Language (GML) relevant Open Geospatial Consortium (OGC) and ISO standards for geospatial data and related services.

The World Bank has implemented such systems in a number of other countries and offers a specialist consultancy in this regard.

RECOMMENDATION 10

Develop and implement an Online Permit application web portal and digital processing system. The system enables the tracking of the progression of a building permit application through the assessment and approval system. It is important to provide a transparent system when dealing with acceptance, assessment and approval of permit applications.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

The development and adoption of digital online building permit systems is usually undertaken by the local government. The parameters of such systems generally are based in the states Build and Urban development legislation. For example, the requirement for the system development to be constructed to ensure that all data must conform to interoperable standards based on Industry Foundation Class (IFC) and City Geography Markup Language (GML) relevant Open Geospatial Consortium (OGC) and ISO standards for geospatial data and related services, is a State requirement.

How the Local Government implements these requirements within a system is up to each local government. However it would be a significant advantage if all local government agencies were to develop the same protocols and system framework. Exchange of data would enhanced.

5.3.5 Digital Signatures

Modern technology has created systems where the verification and security of digital signatures is possible. Implementing this procedure within the records and archive legislation would assist the move to accepting completely digitised permit applications.

RECOMMENDATION 11

Review, confirm or amend the records and archive law to allow for the acceptance of digital signatures that have been security stamped (i.e. verified as original) this would assist the move to accepting completely digitised permit applications.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

Implementing this procedure within the records and archive legislation would assist the move to accepting completely digitised permit applications.

5.3.6 Pre-application process

Early discussions with the permit application agencies helps applicants to make informed decisions about the application and avoid unnecessary processing delays. The pre-application process typically helps the applicant:

- understand the process
- confirms what permits or licenses are required
- give guidance about who the applicant should be talking to about the project and what expertise the applicant may need to assist in the preparation of the application
- find out what information is required to help prepare the application(s)
- identify any issues that may need to be addressed in the application(s)

Typically, this is a joint initiative between the Building Control Department and the Town Planning Department. Often the municipality will become aware of impending developments during the applicants Town Planning application process. It is at this stage that a multidiscipline approach to the application can pay significant dividends to both the applicant and the municipality. The applicant would receive relevant advice on the planning, environmental and building technical features they are proposing. At this early stage of the process, if any issues arise due to regulatory considerations the applicant has the opportunity to amend their approach before submitting their application saving time and costs.

RECOMMENDATION 12

Introducing a system for pre-application meetings. Early discussions with the permit application agencies helps applicants to make informed decisions about the application and avoid unnecessary processing delays. This pre-application process would be a joint initiative between Building Control and Town Planning, as many applications are identified during the Town Planning application process.

REGULATIONS REFERENCE: 10.1 GENERAL (NEW SUB-SECTION)

It is recommended that this new process be inserted into 10.1 General subsection (d) Pre-Application Process.

5.3.7 Requests for further information process

Keeping the applicant informed of the issues as they are identified during the technical assessment process promotes an environment in which clarifications or non-compliances can be addressed immediately rather than waiting until the entire evaluation process has been completed. Electronic communications with the applicant would also ensure speedy replies. If the application is seriously lacking technical content or the quality of the application is poor then it should be rejected back to the applicant to make the appropriate alterations before resubmitting the application. (Refer minor and major amendments 5.3.8 for additional information)

RECOMMENDATION 13

Implementing within the permit processing system the ability to allow for "requests for further information" to be sent to applicants at any stage of the evaluation process in order for the applicant to address the issue in the most expedient manner.

REGULATIONS REFERENCE: 10.3.4 VETTING OF STRUCTURAL DRAWING OF MULTI-STORY AND BUILDINGS OF PUBLIC ASSEMBLY (NEW SUB-SECTION)

It is recommended that the process to request additional information throughout the assessment/vet of a building permit application, is added as a sub-clause in 10.3.4

5.3.8 Major and minor amendments to approved and permitted plans

Permits that have already been granted sometimes need to be amended because the applicant decides to change what they originally proposed to build or alternative building products or systems have been selected.

Many changes are often very minor and have no substantive bearing on the permit that has been granted, but other changes can represent a substantial departure on what was originally proposed when the permit application was being considered by the regulatory agency.

The process that needs to be followed to amend an existing building permit should be proportionate to the nature of the building work. For example a minor change to what was originally approved in the building permit may require a straight forward administrative approach. However, a major change could result in the applicant having to reapply for their building permit.

"Minor" and "major" amendment building work could be defined and an alternative method of dealing with each type of amendment could be implemented.

- Minor amendments could include non-structural amendments that could be confirmed with the designer/engineer and then annotated on the plans. This process would not require a new permit application to be submitted.
- Major amendments could include significant changes to the originally submitted plans. For example any structural changes, outside envelope modifications, and potential thermal efficiency amendments. These amendments would require a new permit application to be submitted.

RECOMMENDATION 14

Develop and implement different approval pathways when distinguishing between minor and major changes identified during construction, to what was originally permitted to enable the amendments to be approved in an efficient fashion.

REGULATIONS REFERENCE: 10.8.1 INSPECTION OF BUILDINGS (NEW SUB-SECTION)

It is recommended that this new process be inserted before 10.8.2 Violation of Approved Plans. The new sub-clause "Major and Minor Amendments" would allow for modifications to the original permit application under certain circumstances. These would be managed through the new process.

5.3.9 Improving the quality of building permit applications

Poor building permit applications has the effect of clogging the system and slowing down the plan evaluation process. It also leads to the inevitable 'further requests for information" which can drive the evaluation process into a non-productive downwards spiral of professional interpretations. Improving the quality of building permit applications has the immediate flow on effect of speeding up the evaluation of the applications and thus delivering more productive time within the evaluation unit.

RECOMMENDATION 15

Develop and implement a plan to raise significantly the quality of permit applications from architects and designers, including the addition of guidance material for the preparation of quality consent applications in the curriculum of any Pakistan based sector training organisation.

Engage with the government to seek assistance in preparation of educational material and delivery of appropriate training to the sector.

NATIONAL INITIATIVE (NEW)

A deliberate and managed regulatory outcome rather than a statutory intervention.

RECOMMENDATION 16

Develop a system that rewards "quality" permits applications with reduced processing times and reduced fees as a result, rather than a system that potentially encourages the practice of reduced quality applications.

REGULATIONS REFERENCE: CHAPTER - 10 BUILDING PLAN SANCTIONING & CONTROLLING AUTHORITY (NEW)

This is an overarching principle. This would support the Stepped Risk Based Building Permitting system. Improvement in the quality of permit applications should result in the efficiency of the plan evaluation and approval. Hence speedier building permits.

5.3.10 Peer review process

A peer review is a collaborative expert support for the proposed design model. This could be a review of the proposed solution or opinions obtained from credible organisations. It provides expert verification of the design philosophy.

RECOMMENDATION 17

Adopt a peer review process for the verification of complex elements designed by professionals where elements are of a new design, of a complex nature or are used in the design of structures with significant public occupancy such as stadiums, malls, hotels, and hospitals etc. The municipalities would be able to accept the technical validity of the peer review, without any further technical processing, providing the authors of the peer review were registered professionals with the appropriate qualifications, competence and experience commensurate to the complexity of the project.

REGULATIONS REFERENCE: 10.3.4 VETTING OF STRUCTURAL DRAWING OF MULTI-STORY AND BUILDINGS OF PUBLIC USE (NEW)

This is a new process in addition to the standard practice offered within 10.3.4. Rather than rely on vetting structural engineer to make the recommendations on design and structural integrity, the use of a suitably qualified and experienced independent professional is proposed. This also removes the possible “conflict of interest” where a “regulators” offer design suggestions. In Best Practice jurisdictions, the regulators technical experts are now allowed to make design changes. Their role is purely to assess whether the design complies with the Building Code. They can offer suggestions and can work closely with the applicants design team to ensure the best possible outcome. However they stop short of making design changes themselves.

5.4 One-Stop-Shop Permitting

The establishment of an OSS will create a “centre of excellence” that co-ordinates building permit applications.

The OSS facilitates the submission process for applications. Applicants would complete a single application form and submit all the relevant documents at the OSS.

An online system would enhance this operation greatly by allowing the applicant to upload all documents and plans through a completely digitised process. The application file would then be forwarded to the various departments in the OSS who review it in parallel, or allow access from other

departments to a common computer program and a common database to facilitate processing of permit applications.

Significant co-operation could been achieved by incorporating practitioners from the Municipality, Architecture and Engineering professionals, and the utility agencies into a single processing centre and establishing electronic file transfer systems. Enabling online access to a single document repository would allow parties such as utility providers to process their appropriate requirements without the physical transfer of documents.

Even where accountability for clearances is fragmented among various Ministries an OSS system can improve the level of service to investors. Under an OSS system, representatives from the clearance agencies undertake a coordinated review of applications which allows the agencies to understand better the requirements of the various agencies participating in the OSS system.

Ultimately, on any complex or controversial issue, the one-window representative will be unable to make a decision, and therefore permit applicants should still submit a complete and correct application.

Nonetheless, an OSS does allow for better communication and co-ordination and better outcomes, particularly when used in conjunction with other measures, including improved transparency, advice and guidelines, checklists and time-limits.

RECOMMENDATION 18

To prevent overlap and ensure deficiency, it is recommended to consider opting to create a "Virtual" One Stop Shop or Single Window where applicants can submit all the required documentation for the building permit. This OSS would improve the organisation of the review process— not by reducing the number of checks needed but by better coordinating the efforts of different agencies. That way, more resources can be devoted to safety checks rather than to paperwork. The "Virtual" OSS would be possible with the introduction of a digital permitting web portal.

OPERATIONAL DELIVERY PROCESS (NEW)

The development and adoption of a "Virtual" One Stop Shop or Single Window is an operational delivery process and not a regulatory requirement. The principles are best business practices and a cooperative philosophy.

6 INDEPENDENT THIRD PARTY REVIEW

6.1 DEFINITION AND SCOPE

A third party review refers to the practice of having an independent party (not the designer or the contractor) review the design and construction of the building. It provides essential and independent "checks and balances" in the building control systems. A third party review is intended to help ensure that building projects above a certain level of complexity and risk are handled in such a way that public health and safety is ensured (as much as possible) during the design and construction process, with minimal conflicts of interests.

6.2 Why Independent Third Party Review Is Important

To a very large degree, a functioning third party review mechanism determines the ability of a construction permitting system to produce robust regulatory outcomes. Note reforms should be undertaken at the cost of weakening this crucially important element of building control. This function is important for four reasons:

- Buildings have a major impact on public safety, including that of persons both within and near the building
- Buildings are complex, and mistakes in building design and construction are highly possible and often likely
- Building defects can be very expensive to repair once the building is complete. This factor can add considerable uncertainty for investors. Design adjustments or repairs are much less expensive during the design or construction process
- Some project stakeholders can be pressured to cut corners thus reducing public safety. Building owners or designers subject to cost and other pressures may have a higher tolerance for risk than would the building occupants or the public. A third party control provides the check and balance needed to minimise such risks[5]

6.3 International Best Practice

6.3.1 Options of Third Party Review

Third-party review can be accomplished in several ways, ranging from review by government inspectors, usually from municipal authorities, to private-sector review. The range of options for independent third party, technical review includes the following:

- **Third-party review by government inspectors from the local permitting authority:** design review and/or construction inspections done directly by municipal inspectors.
- **Third-party review by consultants or private inspectors retained by permitting authorities:** local authorities may rely on expert private inspectors to advise or sign off on the technical review.
- **Accredited third-party inspection agencies retained directly by project developer owner:** government-approved inspection agencies review designs and building construction for the owner.
- **Peer review of building design and construction by another professional engineer:** owners engage another licensed engineer not involved in design or construction to review the design and/or construction.
- **Third-party review provided or engaged by insurer/warranty provider:** in jurisdictions where insurance or warranty providers have a large role, they may arrange the technical review as well.

Jurisdictions sometimes combine several of these potential third-party technical review modalities

[5] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

6.3.2 Construction Inspections

Construction inspections are an audit and verification, by an appropriate authority or licensed inspector, to confirm that critical construction elements have been completed at specific stages during construction and are technically correct.

Inspections will be required to verify that the technical aspects and the validity of construction methods as detailed in the submitted plans and specifications are being adhered to. The inspections are to ensure that the structural integrity, health and safety of the building and that it is being constructed correctly. Inspections are project specific and should be identified by the Municipality during the assessment of the plans and specifications submitted for permit approval. The number and technical level of inspections may differ for different permit application types and will be dependent upon the technical complexity of each of the projects.

It is also desirable to implement minimum standardised inspection for each category of building project with the flexibility to add inspections for more complex building and elements. Standardised inspections improve the transparency, fixes cost and provides certainty.

Generally inspections will capture the following main areas and would be determined by the complexity and risk of the project.

FIGURE 2: TYPICAL SCOPE OF TECHNICAL INSPECTIONS

INSPECTION TYPE	DESCRIPTION
Foundation	An inspection of strip or bored pile foundations before the concrete is poured
Concrete block or concrete reinforcing	An inspection of block work construction, cast in situ panels, columns or walls before the concrete is poured
Concrete floor slab	An inspection, excluding plumbing, of any floor slab and its associated building work before the concrete is poured
Plumbing (under slab)	An inspection of plumbing work under the slab; plumbing to be on test; as-built plan required
Framing	A detailed inspection of the timber structure of the building before the roof cladding and building wraps are installed
Cavity wrap	An inspection of the building wrap and cavity construction before the cladding is installed
Cladding	An inspection of the specific cladding installation to check fixings, flashings, etc.
Pre-line building	An inspection of the building work before the installation of any internal linings
Plumbing	An inspection of any plumbing works in any part of the building; pipe work to be leak and pressure tested
Post-line	An inspection of bracing elements and internal linings
Fire rated linings	An inspection of any fire rated product installed to comply with the building permit and the building code

Membrane tanking	An inspection of a roof, deck or internal wet area membrane or below ground wall requiring waterproofing
Drainage	Any surface water or foul water drainage system associated with the building permit; an as-built drainage plan is required
Residential final	A final inspection to confirm the building work covered by the approved building permit has been completed and complies with that permit and the building code
Commercial final	A final inspection to confirm the building work covered by the approved building permit has been completed and complies with that permit and the building code
Solid fuel appliance	An inspection to confirm the installation of the appliance is in accordance with the manufacturer's specifications and the building code
Acoustic testing	The on-site testing of acoustic construction for multi-unit and multi-level co-joined residential buildings.
Site meeting	The minuted record of any onsite discussion held on site to discuss areas of compliance
Certificate for public use	An inspection of part of the building work of a current building permit to ensure the public can access, move around and exit a building safely before the entire project is complete. This applies only to buildings to which the public would normally have access

RECOMMENDATION 19

Introduce appropriate construction verification inspections based upon size, complexity and risk of the project, and the critical construction processes.

REGULATIONS REFERENCE: 10.8.1 INSPECTION OF BUILDINGS (REPLACE)

It is recommended that rather than a time based inspection regime, a critical building element regime be adopted.

RECOMMENDATION 20

Implement a system where Licensed Engineers and Architects perform inspections on complex portions of work and provide the Municipality with a signed Declaration of Compliance.

REGULATIONS REFERENCE: 10.8.1 INSPECTION OF BUILDINGS (NEW)

It is recommended to add the ability of Licensed Engineers and Architects to perform inspections on complex portions of work on behalf of the municipality.

7 PROFESSIONAL STANDARDS AND OVERSIGHT MECHANISMS

7.1 DEFINITION AND SCOPE

Building design and construction relies heavily on the expertise of designers and contractors, especially for more complex, higher risk buildings, where the design follows performance based rather than prescriptive codes. Where a heavy reliance is made on professional designers, they must be qualified in building design, building science and be able to interpret and comply with relevant building codes and standards. Similarly, where heavy reliance is made on the building contractor, the contractor must be able to read plans and specifications and to understand construction materials and methods.

7.2 WHY PROFESSIONAL STANDARDS & OVERSIGHT MECHANISMS ARE IMPORTANT

In the past ten to fifteen years, building controls in reforming countries have been shifting away from old fashioned public enforcement policies (centred on public building authorities) towards strategies that rely on private practitioners for enforcement. This is a positive trend because it reduces delays and bottle necks with local building authorities. The result however, is greater reliance on the expertise of private sector designers and engineers. The licensing of professionals involved in the building process is therefore a significant part of most building regulatory systems and a robust system of qualifications and licensing for these professionals is crucially important to ensure a higher degree of building code compliance[6].

7.3 INTERNATIONAL BEST PRACTICE

To varying degrees almost all countries in Europe have in the last 10 years moved from traditional public enforcement strategies towards practitioner focused enforcement strategies.

7.3.1 Building and Construction Licensing Scheme

It is important that governments implement robust and transparent construction industry licensing schemes that detail the requirements for qualifications, skills and competencies before licenses are issued. The benefits of such a system include:

- Provide investors and consumers with greater assurance that the designers and constructors engaged are competent to do the job
- Hold constructors accountable when things go wrong
- Increase incentives for professional builders
- Enable risk to be balanced between designers, constructors and the municipalities
- Create an essential element if mandatory insurance/warranty schemes are implemented.

7.3.2 Training Programme

All stakeholder and practitioners should understand the processes, document requirements and conditions for the assessment and approval of permits. A lack of knowledge leads to incomplete applications being submitted and potentially inappropriate applications being accepted by the permitting agencies for processing.

[6] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

7.3.3 Continued Professional Development

Ensure that all building and construction practitioners are required to undertake appropriate continuing professional development (CPD). CPD is the systematic maintenance, improvement and broadening of knowledge and skill and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life.

7.3.4 Major Trends in Reforming Countries

The very different practices in the United Kingdom and in Austria respond to the needs and constraints prevailing in each country. Both provide a model illustrating trends observed in other reforming countries.

In the U.K. approach, enforcement strategies relying on private practitioners allow individual persons or legal entities to perform independent building-controls. These private building professionals are called *approved inspectors,* and they perform building controls in place of the state or municipal building authority[7]. The building permit can be issued by the private approved inspector. The United Kingdom developed and set by law, the qualification criteria for approved inspectors. Approval of private inspectors is carried out by a government body, the Construction Industry Council (CIC)[8].

In the model followed in both Germany and Austria, private qualified individuals or engineering firms can be commissioned by the local municipal building authority to do checks and inspections. The construction permit is formally issued by the local building authority, based on the reports of the private expert. Both countries have robust entry licensing systems for designers and builders.

AUSTRIA AND GERMANY FRANCE: SETTING UP ROBUST PROFESSIONAL QUALIFICATION REQUIREMENTS TO SUPPORT A MODERN PRACTITIONER-BASED ENFORCEMENT STRATEGY

Similar to other countries in Europe, France has a standard two-tier mechanism for establishing zoning requirements.

- First, a regional Master Plan, or Schéma de Cohérence Territoriale (SCT) is typically developed for a period of about 10 to 15 years, usually by a large group of municipalities under a dedicated association chaired by an elected mayor from one of the group's municipalities. The SCT results from a codified, thorough consultation process involving regional stakeholders and the concerned municipalities
- Second, a municipal Zoning Plan, or Plan Local d'Urbanisme (PLU), is updated and digitized, on average, every 5 years. The PLU must be entirely consistent with the SCT in all aspects. Any individual or firm (i.e., the project developer) can have a PLU (or certain aspects of a PLU) annulled by a court, if it is found to be inconsistent with the SCT. A PLU is a detailed document that includes graphic explanations, maps, and the coefficient of land use. It also includes detailed information about utility networks and regulations relevant to the mapped area (e.g., the environment, the national heritage, etc.)

Both the SCT and the PLU are developed by private specialized firms, which are selected as a result of

[7] Applicants can choose to apply for a building permit either at the building authority or with an approved inspector

[8] See www.cic.org.uk.

a public tendering process. Although local elected authorities are fully empowered in the process, the central government can establish key requirements at the start (for example, preservation of

Austria has two relevant professional groups for professional qualification requirements:

- The Baumeister (master builder) must successfully pass both an apprenticeship and a master craftsman's examination or must complete secondary education, ending with a high school certificate. In both cases, some years of specific professional experience plus an official examination by a special commission are also required.
- The Architekt/Zivilingenieur goes through a post-secondary technical education followed by at least three years of professional experience and passage of an official examination organized by a special commission composed of public administration officials and representatives of the Chamber of Architects and Engineers.

Local authorities typically have only limited or light additional requirements when hiring private experts because the candidate's engineering skills will already have been adequately and thoroughly examined through the licensing process.

Both the U.K. and the German and Austrian models can inspire improvements to existing building control systems elsewhere. Neither approach is considered superior to the other, as both fit well the structures and needs of the respective nation's industry. It is worth noting that the system of qualification and the degree of entry-level expertise required for professionals reflects two systems with practical consequences for building-permitting procedures:

- The Austrian and German system depends on high entry standards for the designer and builder, with a consequently lower intensity of inspections in individual buildings.
- The U.K. model minimizes barriers to entry and therefore places a larger focus on third-party inspection of individual buildings.

The Austrian system is "builder"- rather building-focused, with the U.K. implementing a "building" related approach.

7.4 International Best Practice Recommendations

7.4.1 ISSUE: No mandatory professional standards have been set for designers

RECOMMENDATION 21

Create mandatory professional standards based on the compliance strategy chosen by Pakistan (see, for example, the U.K. model and the Austrian and German model. Many countries blend mandatory professional licensing for larger and more complex buildings with a more open system covering smaller, less complex buildings. In best practice countries, having a project designed by an architect or engineer is not the only check on safety. Building designs are still reviewed by a third party, and construction is still subject to inspections. A building design carried out by a designer, however, is less likely to have a defective design and so is more likely to lead to a safe building.

STATE STATUTORY REQUIREMENT AND IMPLEMENTED BY DESIGN, BUILDING AND CONSTRICTION PROFESSIONAL BODIES (NEW)

Implementing this procedure will continually improve the skills and experience of Pakistan's Design, Building and Construction professionals.

7.4.2 ISSUE: The regulation of professionals creates conflicts of interest

RECOMMENDATION 22

Problems with professional licensing bodies usually relate to a conflict of interest. The association seeks to improve its image and serve its members and therefore avoids disciplinary actions against members that may bring unwanted attention to the profession. Typical problems include inadequate qualification requirements and, more frequently, inadequate discipline, allowing incompetent or negligent practitioners to continue to practice regardless of their records of accomplishment. Once diagnosed, the problem admits of the following remedies:

- Modify the governance structure of the licensing body so that the majority of directors are not professional practitioners, or at least increase the representation of non-practitioners or other stakeholders to better represent the public interest
- Improve government oversight of the governance body
- Introduce more robust insurance requirements, peer review, and continuing professional training.

STATE STATUTORY REQUIREMENT AND IMPLEMENTED BY DESIGN, BUILDING AND CONSTRICTION PROFESSIONAL BODIES (NEW)

Implementing this procedure will continually improve the skills and experience of Pakistan's Design, Building and Construction professionals.

8 CUSTOMER ADVISORY GROUP & CONSUMER MONITORING

8.1 CUSTOMER ADVISORY GROUP

It is important to acknowledge why customers are essential to the Central Government and municipalities work. A Customer Advisory Group made up of representatives of existing key customers should be established and convened on a regular basis. This group of people in the construction industry representing various fields of view (such as Architects, Engineers and construction firms) will be asked about their perceptions, opinions, beliefs, and attitudes about the Government regulatory system that affected them and the municipalities building control services and building control function performance. They also can advise the building control management on industry trends, business priorities, and strategic direction. The issues to discuss could include but are not limited to:

- a customer focused regulatory scheme
- sector leadership

- skills and competency
- ensuring a process approach
- a systematic approach to management policies and processes
- a factual approach to decision making
- mutually beneficial supplier relations
- continuous improvement

This action is expected to have the immediate benefit of ensuring that the entire life cycle of the building permitting and inspection processes is delivered consistently and orientated to providing quality outcomes.

RECOMMENDATION 23

Introduce a Building and Construction Stakeholders Customer Advisory Group as an active participant in the development of policies and procedures directly affecting the building and construction industry and implement regular bi-monthly meetings between the Government Ministry responsible for Building and Construction, municipality and the Stakeholders representative group. Stakeholders could further enhance the relationship by being invited to participate on project groups established to improve building control processes and consistency of technical decisions.

OPERATIONAL DELIVERY PROCESS (NEW)

The introduction of a Building and Construction Stakeholders Customer Advisory Group, will enhance any government policy development or local government service delivery.

8.2 Consumer Monitoring

In the regulatory environment that building control works within, it is easy to forget the end customer, the owner of the building and what was their experience of the building permitting process. Although the issuance of building permits is a statutory function, it is also a "service" to the consumer and municipality's community.

Assessing the performance of the building control permitting system against customers' demands is always a delicate balance. However, it is important to gage how well the service is preforming and perceived in order to highlight areas of the process that could do with improving.

It is important to differentiate the two main types of clients that apply for a building permit, the homeowner and the building professional, e.g. Architects, Engineers, Builders and Developers etc. The homeowner may only ever apply for a building permit once in their lifetime, while the professionals are applying on a regular basis.

It is common for two versions of targeted feedback to be used by best practice jurisdictions. A questionnaire provided to every "homeowner" applicant after they have received their occupancy certificate asking about their experiences along the various stages of the building permitting journey and a quarterly survey to professionals seeking feedback and recommendations.

RECOMMENDATION 24

Develop and implement appropriate consumer monitoring activities to ascertain the performance of the building control process and group from building permit applicants who represent homeowners and professionals.

OPERATIONAL DELIVERY PROCESS (NEW)

The introduction of a Building and Construction consumer monitoring activities, will enhance any State or Local Government policy development.

9 LIABILITY AND INSURANCE SYSTEMS

9.1 DEFINITION AND SCOPE

Liability and insurance regimes are crucial in the construction sector because they ensure the accountability of practitioners and enforcement agencies. Insurance systems also contribute to a restitution mechanism for an aggrieved party.

Generally, building code compliance and building safety are a shared responsibility among the designer, builder and permitting authority. Liability for negligent or defective work, depending on the nature of the liability regime, is usually restricted in time to a finite liability period. In practice, liability regimes can be complex, fragmented in terms of legislation, poorly aligned with insurance coverage, and often poorly understood. These factors create delays and confusion and consistently increase costs for regulators and the industry.

9.2 WHY LIABILITY AND INSURANCE SYSTEMS ARE IMPORTANT

Promoting efficient, fair and transparent liability systems with reasonably priced insurance mechanisms is important in helping to prevent building officials or enforcement agencies from stalling the issuance of permits. The simple fear of legal uncertainty can create significant delays and impede the capacity of enforcement agencies to make timely and sound decisions[9].

9.3 INTERNATIONAL BEST PRACTICE

9.3.1 Risks & Liability

A key issue in any move away from complete government backing is the requirement to be able to identify clearly risks and liability. If insurers cannot determine the exposure, or who could be assigned the liability in case of failure (and therefore impacting the ability to recover damages), there will be little incentive for insurers to enter the market. This is a particularly important issue around the self-

[9] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

certification – will self-certified buildings be able to find insurance? It is possible that the only option a legislated alternative such as mandatory industry supported fidelity fund.

An industry based fidelity fund approach could work with industry support, proper governance, a sound claims system, an effective dispute resolution mechanism, and a sound disciplinary system to ensure bad performers cannot close down their business and start a new one in the same area of practice.

The consumer also has some responsibility and accountability and should therefore bear some of the liability. It is worth exploring more contract-based approaches where tort law and negligence claims can be mechanisms to force better industry and consumer accountability.

Legislation of the disciplinary process may also incorporate criminal liability, complete with an appropriate punishment regime for offending at the upper end of the scale, e.g. gross negligence leading to loss of life or injury.

9.3.2 Major Trends in Reforming Countries

Two notable features of a modern and functioning conflict resolution emerge.

- **A dedicated instrument outside the main court system**. Common to good-practice jurisdictions, a separate entity, sometimes having a "conciliation" mandate, is usually in charge of conflict resolution. In the United Kingdom, an appeal relating to planning permits is possible at the Planning Inspectorate. For building permits, the applicant can try to follow an arbitration and conciliation procedure with the national association of the Local Authority Building Control (LABC). If no solution is found, a formal appeal can be lodged with the Department of Communities and Local Government. The applicant can go to court only after having exhausted these instruments.
- **Conflict resolution carried out by knowledgeable professionals**. An important element in the efficiency and fairness of appeal decisions is that professional regulators and industry professionals participate in the specialised conflict resolution bodies and that their views carry weight equal to that accorded to other members. In Canada, for example, the Building Code Commission (BCC) is established by law. While its members are appointed by the Minister of housing, all commission members have appropriate technical expertise and are appointed from both the regulatory and the industry sectors. BCC decisions are binding but case specific. Interestingly, decisions by the BCC are final—no further appeal can be made. Hearings on technical issues almost never exceed 6 to 8 weeks, which presents another decisive advantage of the BCC over the main court system

9.4 International Best Practice Recommendations

9.4.1 ISSUE: The responsibilities of key parties are not delineated

RECOMMENDATION 25

Delineate roles and responsibilities of key parties, including the building owner, designer, manufacturers, contractors, inspectors, and any private inspection agencies. This can be done through legislation, regulation, or interpretive guidelines. Clarifying the roles and responsibilities of all parties will help to ensure that all parties and practitioners recognize that building safety and compliance with building codes are a shared responsibility.

REGULATIONS REFERENCE: CHAPTER – 9 ROLES AND RESPONSIBILITIES (REVIEW)

It is recommended that this chapter be reviewed to ensure all intersected parties roles and responsibilities are well defined.

9.4.2 ISSUE: The permitting agency has no formal liability

RECOMMENDATION 26

Extend liability to the permitting agency. In good-practice jurisdictions, building permitting agencies are liable for acts of both omission and commission. In other words, permitting agencies should be liable for what they do as well as for what they fail to do. In common-law countries, case law has established that once a permitting system is created, the permitting body has a duty of care to all persons, not just to the building owner.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

The State's legal liability system defines the liability parameters for the permitting agency.

9.4.3 ISSUE: The liability is allocated inappropriately or key parties have no liability

RECOMMENDATION 27

Extend liability to additional practitioners, such as contractors and small building designers.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

The State's legal liability system defines the liability parameters for the additional practitioners, such as contractors and small building designers.

9.4.4 ISSUE: Key parties have no insurance

RECOMMENDATION 28

Require certain key practitioners to carry liability insurance. In many good-practice jurisdictions, professional designers such as architects and engineers are required by their Government regulation and their professional associations to carry liability insurance, with the extent of coverage determined by building type. The challenge for policy makers is to avoid creating barriers to entry for smaller and new entrants into the design or construction business while avoiding unfair competition between responsible firms that obtain insurance and firms unable or unwilling to obtain coverage and that can thus operate at lower cost.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

The State's legal system requires key practitioners to carry liability insurance.

10 PRODUCT CERTIFICATION SYSTEMS

10.1 DEFINITION AND SCOPE

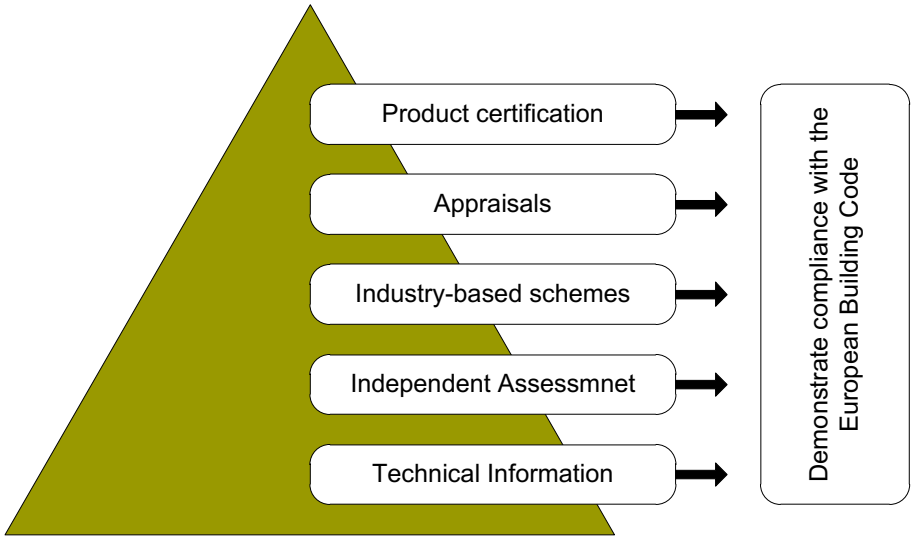
An authorised product database is an authoritative repository of building products and processes containing information required in the decision to grant a building permit.

Products would be categorised according to the level of assurance provided. The product assurance framework below outlines options for achieving product assurance and demonstrating Building Code compliance[10].

The database would have version control and provide for categories recording the reliability or veracity of information.

FIGURE 3: PRODUCT ASSURANCE FRAMEWORK

[10] http://www.dbh.govt.nz/codewords-42-6



Product Assurance Framework

Product, or process, information would be stored in a digital format, including 3D plans. Where product, or process, information is available in a 3D format it will be capable of being incorporated into an enhanced Building Information Modelling system (BIM).

10.2 Why Product Certification Systems Are Important

A country with a functioning product certification system can ensure smooth incorporation of new designs and techniques and can respond to innovations in building designs and systems suited to the market and consumer demands that comply with or exceed public-policy objectives for buildings. New or innovative building designs, systems, materials and equipment may also prove less costly and better performing than more traditional approaches[11].

10.3 International Best Practice

10.3.1 Approved/Listed/Certified Products

Internationally there is a strong connection between product approvals (listing), standards and building codes.

Manufacturers, importers, suppliers and marketers can have their building products or methods of construction assessed and certified to demonstrate that they meet the performance requirements of the Building Code. A product certificate provides independent confirmation that a product or construction method complies with the Building Code.

Product certification is designed to streamline and speed up the building permit and inspection process, and to avoid repeated assessment of the same products.

The product certificate would state information and conditions on specifying and installing the building product or construction method to ensure that it complies with the Building Code.

[11] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

A building permit would still be required. However, where a certified product or construction method is used, the building permit approver must accept the product or construction method as complying with the Building Code where that product or construction method is being used in accordance with the certificate and its instructions.

In Europe, the Construction Products Regulation (CPR) and its six essential requirements has had a significant positive impact on the building regulatory environment.

Construction Products Regulation (the CPR) aims to ensure reliable information on construction products in relation to their performances. This is achieved by providing a “common technical language" offering uniform assessment methods for the performance of construction products.

The Construction Products Regulation (305/2011/EU - CPR) was adopted on 9 March 2011.

These methods have been compiled in harmonised European standards (hEN) and European Assessment Documents (EAD). This common technical language is to be applied by:

- manufacturers when declaring the performance of products,
- authorities of Member States when specifying requirements for products or processes,
- users (architects, engineers, constructors etc) when choosing the products most suitable for the intended use in construction works.

The CPR requires the amendment or replacement of existing EU member states’ references to national technical standards in their national construction regulations by adopting the European-wide harmonised technical specifications for construction products. Subsequently, all European Union Member States have re-drafted their building regulations in order to adopt the European approach.

Currently there are several hundred harmonised European standards applicable to the building industry. The CPR was introduced to create an effective single market for construction products across the European Union, reducing barriers to trade which could result from highly prescriptive requirements and methods of verification. It aimed to accomplish this objective through a system which focused on six essential requirements, which are established for buildings and civil engineering works and not for construction products. Conformity with the principles of the CPR is to be assessed by application of harmonised technical specifications.

The harmonised European standards on construction products together with the relevant horizontal standards on assessment methods are available for:

- resistance to fire
- reaction to fire
- external fire performance
- noise absorption
- construction products in contact with drinking water
- release of dangerous substances into indoor air, soil and (ground) water.

The harmonised European standards create a common European technical language to be used by all participants in the construction sector to:

- express requirements (regulatory authorities in Member States)
- declare the product performance (manufacturers)
- verify compliance with such requirements (design engineers, contractors).

In the United States and Canada there are a number of test standards promulgated by groups such as the American Society for Testing and Materials (ASTM), Underwriters Laboratories (UL), and others, that develop product test standards. Testing and listing organisations, such as UL, then test products against the standards and, if they pass the tests, they are deemed 'listed for the purpose.'

The building codes and design and installation standards then reference ASTM, UL, and related standards and require that only systems listed for the purpose be used (this applies to a wide range of safety related issues, from electrical hazard, to fire resistance, to off-gassing of material in construction products). This reliance on 'listed products' facilitates quick approvals from building code officials for most buildings.

When designers want to use materials, products, systems or methods not listed by UL or other organisations, there are options to obtain an evaluation from groups such as the International Code Council (ICC) Evaluation Service. This service will assess the product for the desired use, or independent analysis and testing can be conducted, with supporting material provided to the building official as part of the design submission. This is not usually seen as an excessive burden as it is used only for unique materials, products, and designs, which may constitute 10% of the market. The remaining 90% of products can be addressed through the standard testing and listing regime.

RECOMMENDATION 29

Consider developing a Product Certification scheme. Product certification is designed to streamline and speed up the building permit and inspection process, and to avoid repeated assessment of the same products.
The product certificate would state information and conditions on specifying and installing the building product or construction method to ensure that it complies with the Building Code.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (REVIEW AND UPDATE)

Reference 10.3.2 Documents (f) Details of Building Materials

11 CONFLICT RESOLUTIONS MECHANISMS

11.1 DEFINITION AND SCOPE

Conflict resolutions and appeal mechanisms provide potential remedies for persons or firms that consider themselves adversely affected by the decisions of permitting authorities'. Legislative and regulatory provisions may also be subject to different interpretations, which can be addressed by dedicated dispute resolution or interpretive bodies created by law. In best practice jurisdictions appeal processes are established to address situations such as the following:

- **Interpretation of technical requirements**: Disputes between building practitioners and regulators regarding the interpretation of technical building code provisions
- **Sufficiency of building code design compliance**: Disputes about whether a particular building design or alternative solution achieves sufficiency of compliance with a regulatory requirement
- **Licensing of building professionals**: Appeals of disputes between an applicant or registered person and a licensing authority regarding a licensing decision such as initial licensing, renewal, revocation, or discipline can be addressed through specialised tribunals
- **Appeal to civil court**: Building laws typically provide for an appeal to a civil court for persons who consider themselves aggrieved by a decision made by a local building authority

11.2 WHY CONFLICT RESOLUTION MECHANISMS ARE IMPORTANT

Setting up a professional dispute resolution mechanism regarding building regulation is an important policy element to promote transparency and a level playing field. Some countries have responded to this need by setting up dedicated dispute resolution organisations, which typically leverage professional expertise within regulating bodies and the private sector. A significant gap exists between good practice countries which tend to have dedicated conflict resolution instruments and countries that do not have them[12].

11.3 INTERNATIONAL BEST PRACTICE

11.3.1 A Dedicated Instrument Outside The Main Court System

Common to good practice jurisdictions is the establishment of a separate entity sometimes having a "conciliation" mandate is usually in charge of conflict resolution.

11.3.2 Conflict Resolution Carried Out By Knowledgably Professionals

An important element in the efficiency and fairness of the appeal decisions is that professional regulators and industry professionals participate in the specialised conflict resolution bodies and that their views carry weight equal to that accorded to other members.

[12] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

11.4 International Best Practice Recommendations

11.4.1 ISSUE: Conflicts arise between permitting agencies and building practitioners on the interpretation of technical and administrative provisions

RECOMMENDATION 30

Senior regulating agencies must provide interpretations of technical and administrative provisions. The level of government that developed the legislative and regulatory articles should provide interpretations regarding their intent. Interpretation of legislative and regulatory articles can be nonbinding and offered to practitioners or enforcement agencies on an informal basis. Interpretations can also be binding, in which case a more rigorous development process may be used, with the results equally binding on the permitting authority.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

Clear interpretations of technical and administrative provisions should be provided by the Central Government to avoid misinterpretation and loss of policy or technical outcome intent.

11.4.2 ISSUE: Permitting agencies often reject innovative solutions

RECOMMENDATION 31

Establish a commission of experts to make rulings on building innovations. An independent commission composed of experts in several technical fields should be empowered to make rulings on whether a particular innovative or alternative building system, material, or design complies with the objectives and performance levels defined in the building code.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

An independent commission has an unbiased opinion and will delivery objective and informative judgements.

11.4.3 ISSUE: The system has limited capacity to deal with disputes between building practitioners and permitting agencies

RECOMMENDATION 32

Establish an independent, quasi-judicial dispute-resolution body. A quasi-judicial body that can make binding decisions within its area of expertise should be established to deal with disputes between practitioners and permitting authorities on matters related to the interpretation of building codes or the sufficiency of compliance.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

Process to independently address disputes between practitioners and permitting authorities on matters related to the interpretation of building codes or the sufficiency of compliance.

12 QUALITY MANAGEMENT SYSTEM

12.1 WHAT IS A QUALITY MANAGEMENT SYSTEM

A quality management system is usually a documented system describing, the organisational structure, responsibilities, authorities, policies, processes, procedures and resources for implementing quality management principals to achieve management goals and objectives (including statutory) within an organisation. This includes all activities which contribute to quality, directly or indirectly. The system should describe common-sense rules or methods for undertaking specific tasks or functions.

A quality management system is usually aligned with a "Standard" e.g. ISO 9000 family of standards related to quality management systems. While quality management systems can come in a myriad of different models, there are essentially two core interlinked disciplines to any given system:

- A key set of defining principles based upon generic best business practices which are the pillars of the system and integral to a given system's design; and
- A more detailed set of process descriptors detailing the processes and mechanisms that are used to deliver the outputs of the business, system, service or whatever the quality management system is being applied to. In other words this layer makes up the technical body of the system.

Combined, these two overlapping disciplines will usually make up any quality management system, regardless of its specific attributes.

The detailed components of any quality management system will need to be developed around fundamental quality and regulatory issues while paying specific attention to the context the model is being designed in. For example, the liability system it operates in (proportionate or joint and several), the level of professionalism, technical competency, and track record of the industry, the supporting structures in the industry that can impact on quality (e.g., legislation, policy, workforce development, resource levels, consumer confidence, etc).

12.2 INTERNATIONAL BEST PRACTICE

12.2.1 Opportunities for Improvement

The current trend for quality assurance systems internationally, is a deliberate movement away from the traditional identification of non-conformances, to a new "culture" of viewing all issues, non-conformances and new ideas as "Opportunities for Improvement". This concept provides a more constructive environment for all staff to participate in improving the systems, processes and outcomes of the organisation.

Consequently, the traditional auditors' role is evolving from the identification of punitive non-conformances into a champion of improvements or as it is sometimes known "Agents of Change".

Quality Management Systems are essential in moving a construction permitting regime away from a heavy oversight methodology of the traditional permitting systems to a more collective system based upon reliance of outputs from building and construction professionals with quality management systems in effect.

13 Sound and Transparent Urban Planning Requirements

13.1 Definition And Scope

The requirements for obtaining a building permit entails compliance with applicable law, a term referring to regulations governing where and under what conditions something can be built. Applicable laws may also be referred to as prior clearances, since building authorities will require prior clearances from agencies overseeing adherence to the law in question.

In some countries, verifying compliance with zoning and other land-use planning regulations causes the most concern. Developers, quite reasonably, expect that the review of building proposals, particularly those for larger and more complex building projects not in conformance with existing zoning or land-use policies, will take time to gain approval. Such projects often require research studies on their impact on local infrastructure, traffic, and the environmental and other matters. One or more public consultations may also be required. Where a proposed project appears consistent with an area's existing land use development, the approval process should be relatively simple and straightforward. This is unfortunately not the case with most jurisdictions.

13.2 Why Sound And Transparent Urban Planning Requirements Are Important

Urban planning approval issues arise often in countries formally part of the Soviet Union, transitioning from state-controlled to market-based economies. In some of these countries, planning information is seriously outdated; it may even be treated as secret information and not made available to the public. Access to up-to-date land use planning information is crucial for developers because building projects involve large up-front investments of time and money for feasibility studies and preliminary plans[13].

13.3 International Best Practice

The most notable and successful reforms focus on introducing information technology to provide users and certified professionals with access to planning information. In Vienna, land-use plans including zoning and infrastructure information, as well as officials' plans for future growth and development policies of the city, are all available online. The zoning map, for example, allows the user to zoom in on particular areas of the city to determine the current zoning and relevant land-use policies. Legal reforms have created a predetermined "right to build" for projects complying with planning and zoning requirements.

The most notable and successful reforms focus on introducing ICT to provide users and certified professionals with access to planning information. In Vienna, land-use plans, including zoning and infrastructure information as well as official plans for the future growth and development policies of the city, are all available online. The zoning map, for example, allows the user to zoom in on particular areas of the city to determine the current zoning and relevant land-use policies. Legal reforms have consistently created a predetermined "right to build" for projects complying with planning and zoning requirements.

[13] Good practices for Construction Regulation & Enforcement Reform, Guidelines: Investment Climate I World Bank, January 2013

FRANCE: A PARTICIPATORY AND TRANSPARENT ZONING SYSTEM

Similar to other countries in Europe, France has a standard two-tier mechanism for establishing zoning requirements.

- First, a regional Master Plan, or Schéma de Cohérence Territoriale (SCT) is typically developed for a period of about 10 to 15 years, usually by a large group of municipalities under a dedicated association chaired by an elected mayor from one of the group's municipalities. The SCT results from a codified, thorough consultation process involving regional stakeholders and the concerned municipalities
- Second, a municipal Zoning Plan, or Plan Local d'Urbanisme (PLU), is updated and digitized, on average, every 5 years. The PLU must be entirely consistent with the SCT in all aspects. Any individual or firm (i.e., the project developer) can have a PLU (or certain aspects of a PLU) annulled by a court, if it is found to be inconsistent with the SCT. A PLU is a detailed document that includes graphic explanations, maps, and the coefficient of land use. It also includes detailed information about utility networks and regulations relevant to the mapped area (e.g., the environment, the national heritage, etc.)

Both the SCT and the PLU are developed by private specialized firms, which are selected as a result of a public tendering process. Although local elected authorities are fully empowered in the process, the central government can establish key requirements at the start (for example, preservation of agricultural zones, flood prevention, etc.) and will monitor the final compliance of the PLU with specialized controllers. This early notification of requirements is referred to as *porter à connaissance*. A PLU creates a "right to build" for any building applicant, as long as the proposed project is located in one area opened for development. Municipalities have the obligation to allow access of their PLUs to all citizens, via a website or at the municipality office. Areas within the outreach of utility companies and that have adequate infrastructure to allow immediate physical connections are marked with a specific code (1AU). Building projects developed in these areas are not subject to any form of preliminary approval or notification requirements.

The French system illustrates a widespread European practice of not requiring preliminary zoning permits, on the following basis:

- A predetermined right to build exists in areas for which zoning plans allow such building.
- Applicants for construction permits can access all relevant zoning information with no restrictions, at a minimal cost, and can determine, ex ante, if the project meets zoning conditions.

With the notable exception of the United Kingdom, most European countries, such as Austria and Germany, have assigned their building authorities the task, integrated into review of the building permit application, of verifying that a project complies with zoning requirements.

13.3.1 ISSUE: Land-use plans are administered by the senior (or state) level of government

RECOMMENDATION 33

Assign core planning and zoning responsibilities to local authorities. Planning approval should be decentralised to the extent possible to improve efficiency, accountability, and coordination with building permit approvals. Local municipalities and their residents are most directly affected by land-use decisions: they are always in a better position to evaluate the impact of development proposals on infrastructure, the community, and the local tax base. Senior level (or state) governments have a more natural role in policy issues that cut across municipal boundaries. This includes major transportation, transit, infrastructure, investment, or broad impact issues.

REGULATIONS REFERENCE: SECTION 1.0 (NEW ADDITION)

Definition of Local Governments responsibilities and powers under the Urban planning Act.

13.3.2 ISSUE: Land-use plans are out of date

RECOMMENDATION 34

Enforce periodical planning update cycles, such as every 5 to 10 years, involving local stakeholders and systematic public consultations. Updating city master plans and zoning requirements is essential to avoid the development of excess discretion in individual planning permits. An updated zoning plan should create a straightforward and predetermined “right to build” when a building project is in compliance with zoning requirements.

REGULATIONS REFERENCE: SECTION 1.0 (NEW ADDITION)

Definition and time span of periodical planning update cycles.

13.3.3 ISSUE: Planning requirements lack transparency

RECOMMENDATION 35

Ensure full disclosure of planning information and public consultations. In countries transitioning from a command-and-control to a market economy and with only a recent history of embracing private land ownership, full disclosure of planning information is not always widely accepted. Establishing web-based, detailed land-use plans, such as those used in Vienna, remains the most effective measure for ensuring high standards of transparency.

REGULATIONS REFERENCE: SECTION 1.0 (NEW ADDITION)

Requirements and processes of full disclosure of planning information and public consultations.

14 ADDITIONAL RECOMMENDATIONS

14.1 E GOVERNANCE STANDARDS

E-governance is the coordination and development of organisations moving into the digital world to allow the transfer of information between agencies. Defining the interoperability standards to ensure digitised data sets of development and construction information are able to be shared in an efficient and secure environment will be of increasing importance.

In order to achieve the maximum gains in efficiency and productivity, it is critical that agencies developing digitised systems ensure that "interoperability" between relevant agency systems is designed and built into any new systems.

RECOMMENDATION 36

Ensure that any developments in permit application digitisation are compatible with any e-governance initiatives.

STATE STATUTORY REQUIREMENT: STATE LEGISLATION AND SUPPORTING LOCAL GOVERNMENT REGULATIONS (NEW)

State requirements and guidance to ensure long-term interoperability of Building and Construction data.

15 BUILDING INFORMATION MODELLING

15.1 BUILDING INFORMATION MODELLING (BIM)

Building Information Modelling (BIM) is a technology that allows a set of interacting policies, processes and technologies to generate a "methodology to manage the essential building design, construction, maintenance and overall project data in digital format throughout the building's life-cycle". This digital information, in its most simplistic form, is a three dimensional (3D) representation of a building (and its hidden specification details) to be available to the multiple parties involved in the project including, designers, clients and permitting agencies.

BIM has the ability to expand to 4D (project scheduling and logistics), 5D (project costing) and 6D (life cycle management).

BIM software is available internationally from a number of private providers.

"The key benefit of BIM is its accurate geometrical representation of the parts of a building in an integrated data environment"[14]

Related benefits are automated assembly, better design, controlled whole-life cost and environmental data, enhanced processes, higher production quality, improved customer service, lifecycle data[15].

[14] CRC for Construction Innovation, 2007c,p. 3-4

The estimated cost savings arising from the use of BIM in Australia range from 5.5% to 9.6% depending on the user (architect, engineer, contractor or owner)[16].

The Allen Consulting Group study in Australia indicates that the progressive uptake of BIM will add an initial 0.002% to Australia's GDP rising to 0.52% over 15 years[17].

This action is being taken by a number of governments.

In the Netherlands, BIM has become a mandatory requirement in central government projects in the offices sector. From 1 November 2011, procurement contracts worth more than €10 million must use BIM[18].

The UK government has embarked on a five-year programme to introduce BIM into all public sector projects by 2016[19].

In Singapore the government is targeting a figure of 80% uptake of BIM by 2015, and the government is introducing a series of strategies to stimulate BIM use. The public sector is taking the lead, helping build BIM capability through training and certification and incentivising adopters with subsidies from a government BIM fund. Work is being done on pilots projects and to help the industry become BIM-ready. Larger projects will be required to use BIM for their architectural designs by 2013 and for engineering designs by 2014; smaller projects, both public and private, will be covered by 2015. The Singapore Building and Construction Authority runs workshops and road shows to raise awareness[20].

If BIM is considered to be a critical factor in raising productivity in the building sector then the government can encourage the uptake of BIM at a faster rate. This phase will require the incorporation of BIM into all government construction contracts over a certain dollar value or level of complexity.

RECOMMENDATION 37

The Government of Pakistan should establish some familiarity with the Building Information Modelling (BIM) systems. Begin discussions with your IT department and bring their attention to the issue. Explore the availability of BIM Viewers such as Solibri Model Checker, which are much like a PDF viewers, which allows users (i.e. Building Control departments) the ability to view BIM files while not altering the BIM file content.

STATE POLICY INVESTIGATION AND LONG TERM PLANNING (NEW)

Understand the requirements and parameters of Building Information Modelling (BIM) before it enters the Pakistan market.

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[15] Productivity In The Building Network: Assessing the Impacts of Building Information Models, The Allen Consulting Group, 2010, p13
[16] Iibid. p51
[17] Productivity In The Building Network: Assessing the Impacts of Building Information Models, The Allen Consulting Group, 2010, p57
[18] http://www.buildingsmart.no/sites/default/files/no_6_bsi_newsletter.pdf
[19] http://www.building.co.uk/news/all-government-projects-to-use-bim-within-five-years/5018349.article
[20] http://www.buildingsmart.no/sites/default/files/no_6_bsi_newsletter.pdf

RECOMMENDATION 38

The Government of Pakistan should set National BIM Interoperability Standards interoperable standards based on Industry Foundation Class (IFC) and City Geography Markup Language (GML) relevant Open Geospatial Consortium (OGC) and ISO standards for geospatial data and related services.

STATE POLICY INVESTIGATION AND LONG TERM PLANNING (NEW)

Setting State Interoperability standards before the proliferation of BIM system in Pakistan.

16 Environmental Protection Authorities

16.1 What are Environmental Protection Authorities

Environmental Protection Authorities (EPA) are generally the government agency responsible for regulatory functions concerning a country's environmental management. They work alongside other government agencies, industry, science and research bodies and the public to deliver environmental outcomes for the people of the nation.

They will consult with the community, industry, business and government on a broad range of activities and issues that affect the county's environment. This may include but are not limited to:

- air, water and noise pollution
- waste and resource recovery
- contaminated land
- dangerous goods
- chemicals and hazardous materials
- pesticides
- radiation and solaria (tanning units)
- native forestry
- coal seam gas projects
- wind farms.

They generally respond to pollution incidents and emergencies. These can include:

- determining measures to prevent and prepare for incidents that may impact on the environment
- facilitating the protection of the environment during emergency response and recovery
- facilitating the clean-up of land and inland waters affected by pollution incidents.

They enforce environmental regulations such as:

- Issue environment protection licences to control activities that could have an impact on the environment or human health, and to encourage better environmental performance.
- Monitor emissions and compliance, conduct audits and investigate reports of pollution. If necessary, impose fines, require stricter operating conditions, impose pollution reduction programs and/or order people to clean up pollution.
- Prosecute organisations and individuals who break environmental laws. EPA prosecutions can result in heavy fines and jail sentences.

16.2 International Environmental Performance Index

The Environmental Performance Index (EPI) is a method of quantifying and numerically marking the environmental performance of a state's policies. This index was developed from the Pilot Environmental Performance Index, first published in 2002, and designed to supplement the environmental targets set forth in the United Nations Millennium Development Goals.

EPI	Objective	Issue Category	Indicator
Environmental Performance Index (EPI)	Environmental Health (50%)	Health Impacts (33%)	Environmental Risk Exposure (100%)
		Air Quality (33%)	Household Air Quality (30%)
			Air Pollution - Average Exposure to PM2.5 (30%)
			Air Pollution - PM2.5 Exceedance (30%)
			Air Pollution - Average Exposure to NO2 (10%)
		Water and Sanitation (33%)	Unsafe Sanitation (50%)
			Drinking Water Quality (50%)
	Ecosystem Vitality (50%)	Ecosystem Vitality (50%)	Water Resources (25%)
		Agriculture (10%)	Nitrogen Use Efficiency (75%)
			Nitrogen Balance (25%)
		Forests (10%)	Change in Forest Cover (100%)
		Fisheries (5%)	Fish Stocks (100%)
		Biodiversity and Habitat (25%)	Terrestrial Protected Areas (National Biome Weights) (20%)
			Terrestrial Protected Areas (Global Biome Weights) (20%)
			Marine Protected Areas (20%)
			Species Protection (National) (20%)
			Species Protection (Global) (20%)
		Climate and Energy (25%)	Trend in Carbon Intensity (75%)
			Trend in CO2 Emissions per KWH (25%)

Environmental Performance Index Top 20 Rankings

Rank	Country	Indicator %	Rank	Country	Indicator %
1	Finland	90.68	**11**	New Zealand	88.00
2	Iceland	90.51	**12**	United Kingdom	87.38
3	Sweden	90.43	**13**	Australia	87.22
4	Denmark	89.21	**14**	Singapore	87.04
5	Slovenia	88.98	**15**	Croatia	86.95
6	Spain	88.91	**16**	Switzerland	86.93
7	Portugal	88.63	**17**	Norway	86.90
8	Estonia	88.59	**18**	Austria	86.64
9	Malta	88.48	**19**	Ireland	86.60
10	France	88.20	**20**	Luxembourg	86.58

16.3 International Best Practice

16.3.1 Finland[21]

Finland's Environmental Protection Act, is based on an integrated system for environmental permits. With the integration of the environmental permits, pollution can be prevented efficiently since the environment is considered as a whole.

[21] http://www.ym.fi/en-us/the_environment/Legislation_and_instructions

Applications for the environmental permits are made to one authority, and all the environmental effects of the activity will be assessed during the consideration of the permit. Technological solutions that prevent pollution as much as possible and that are at the lowest possible cost will be applied to reduce emissions.

The act defines more explicitly the requirements of environmental permits and the prerequisites for granting a permit.

Responsibility for environmental permits

The Regional State Administrative Agencies (AVIs) are the state authorities charged with issuing environmental permits under Finland's Water Act (587/2011) and Environmental Protection Act. The state authorities handle permits for activities with major environmental impacts, as well as all permits under the Water Act. Other environmental permits are dealt with by the municipal environmental protection authorities.

A key provision of the Environmental Protection Act is the public's right to influence the decision-making by stating an opinion on a permit application. Other stakeholders also have certain rights under the Act. In addition to the parties involved (permit applicants and persons who are affected by an activity), associations and foundations that promote the protection of the environment, health and nature or that work to improve the living environment and who may be affected by an activity have the right to appeal a permit decision.

Other legislation on environmental protection

The Environmental Protection Act does not cover physical or structural damage to the environment, which is not caused by pollution, or land use and nature conservation. These issues are covered in separate statutes.

- The Water Act controls the use of water resources and structures built along waterways.
- The Waste Act (646/2011) covers waste management and recovery.
- Other separate legislation covers genetic technologies, chemicals, protection of the marine environment, and environmental impact assessments.

Environmental management legislation

Environmental management is covered in the Act on Voluntary Participation in the Eco-Management and Audit Scheme (EMAS Act) and the EU Regulation on eco-management and audits.

- Act on Voluntary Participation in the Eco-Management and Audit Scheme (121/2011, in Finnish, Finlex)

The most essential content regarding environmental management can be found in the EU Regulation. The EMAS Act largely covers the creation of the national infrastructure required to implement the regulation – authorised bodies and accreditation bodies, for example.

Adherence to the EMAS Act and EU Regulation, and therefore participation in the EMAS system, is voluntary for organisations. Organisations can use the EMAS system to indicate that they handle environmental matters to a higher standard than is required by mandatory legislation.

A third-party verifier inspects the environmental management system and environmental report of the organisations involved in the EMAS system

16.3.2 Denmark[22]

The Danish Environmental Protection Agency is part of the Ministry of Environment and Food.

Cooperation between environmental authorities

Environmental work is clearly divided between central and regional administrations and municipal departments.

The Environmental Protection Agency (EPA) is responsible for legislation and is the authority in charge of major national tasks as well as particularly complex tasks.

The EPA prepares legislation and guidelines and grants authorisations in several areas. Further duties include the monitoring of chemicals and offshore platforms.

The municipalities are responsible for granting permits and inspection of other enterprises and also carry out the majority of specific public sector duties. The municipalities are typically the point of contact for the general public and for companies wishing to access information on the environment.

The Danish Regions are charged with the generation of regional development plans. They undertake special tasks in the areas of soil contamination and raw materials.

The Nature Protection and Environmental Board of Appeal deals with complaints within the remit of the Ministry of the Environment and Food.

Important legislation for the Danish EPA

- The Environmental Protection Act contains the central legislation on pollution prevention and control. It includes provisions on approval of polluting activities, on protection of the soil, on waste and recycling, as well as on cleaner technology.
- The Environmental Approvals etc. for Livestock Farming Act contains regulations for an environmental approval scheme for livestock farmers.
- The Contaminated Soil Act deals with preventing, remediating, and limiting soil contamination, and eliminating and preventing any harmful effects of soil contamination on groundwater, the environment and human health.
- The Chemical Substances and Products Act contains provisions on notification, classification, packaging, labelling, storage, use and approval of chemical substances and products.
- The Access to Information on the Environment Act contains provisions on public access to environmental data and information, and provisions on processing cases regarding access to environmental information.
- The Environment and Gene Technology Act contains rules about approval and use of genetically modified organisms (GMOs).

Danish regulations

The municipalities of Denmark and the Environmental Protection Agency must conduct environmental inspections. Inspections must investigate compliance with the legislation and rules established pursuant to the Danish Environmental Protection Act or the Danish Livestock Farming Environmental Approval Act.

[22] http://eng.mst.dk/

In practice this means first and foremost an investigation of compliance with conditions relating to environmental approvals and wastewater permits, waste regulations and other orders concerning e.g. noise.

Inspection is governed by a variety of rules and guidelines.

Firstly, inspections by the municipalities and by the decentralised units of the EPA are covered by Chapter 9 of the Danish Environmental Protection Act and Chapter 5 of the Danish Livestock Approval Act. Parts of the inspection work such as inspections involving wastewater or waste may be covered by other aspects of legislation.

Legislation is implemented through the instruments of statutory orders. In the field of inspections, for example, there is an Order on reporting for environmental inspection and environmental permits and the Order on charges for approval and inspection. Environmental inspections of establishments which pose a risk is covered by the Order on risk.

Environmental approvals for activities and livestock farms and environmental inspection involving certain activities and livestock farms are covered by charges. The Order on charges provides additional details as to when charges apply to an activity or livestock farm.

16.3.3 New Zealand[23]

The New Zealand Environmental Protection Authority is the government agency responsible for regulatory functions concerning New Zealand's environmental management.

These include national consenting under the Resource Management Act, management of the New Zealand Emissions Trading Scheme and New Zealand Emissions Trading Register, regulation of hazardous substances, new organisms, ozone depleting chemicals, hazardous waste exports and imports, assessment of environmental effects in Antarctica, and managing the environmental effects of activities in the Exclusive Economic Zone and Continental Shelf.

The EPA must liaise with other government agencies in New Zealand and internationally, industry, science and research bodies, Māori, and the public.

The EPA administer applications for major infrastructure projects of national significance, and regulate new organisms (plants, animals, GM organisms) and hazardous substances and chemicals.

The New Zealand EPA administers the Emissions Trading Scheme and operate New Zealand's Emissions Trading Register. The EPA manage the environmental impact of specified activities in the Exclusive Economic Zone, including prospecting for petroleum and minerals, seismic surveying and scientific research.

The EPA works with the following statutory requirements:

- Environmental Protection Authority Act 2011
- Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012
- Hazardous Substances and New Organisms Act 1996
- Resource Management Act 1991
- Climate Change Response Act 2002
- Ozone Layer Protection Act 1996

[23] http://www.epa.govt.nz/Pages/default.aspx

- Ozone Layer Protection Regulations 1996
- Imports and Exports (Restrictions) Act 1998
- Imports and Exports (Restrictions) Prohibition Order (No 2) 2004
- Imports and Exports (Asbestos-containing Products) Prohibition Order 2016

16.3.4 United Kingdom[24]

The UK Environment Authority, is an executive non-departmental public body, sponsored by the Department for Environment, Food & Rural Affairs with responsibilities relating to the protection and enhancement of the environment in England.

The Environment Agency's stated purpose is, *"to protect or enhance the environment, taken as a whole" so as to promote "the objective of achieving sustainable development"* (taken from the Environment Act 1995, section 4). Protection of the environment relates to threats such as flood and pollution. The vision of the Agency is of "a rich, healthy and diverse environment for present and future generations.

The Agency is the main regulator of discharges to air, water, and land – under the provisions of a series of Acts of Parliament. It does this through the issue of formal consents to discharge or, in the case of large, complex or potentially damaging industries by means of a permit.

Failure to comply with such a consent or permit or making a discharge without the benefit of a consent can lead to criminal prosecution. Magistrates' Court can impose fines of up to £50,000 or 12 months imprisonment for each offence of causing or knowingly permitting pollution.

The Agency has an important role in conservation and ecology specifically along rivers and in wetlands. More general responsibility for the countryside and natural environment in England falls to the organisation Natural England. The Environment Agency's activities support users of the rivers and wetlands, including anglers and boaters.

Within England, the EA is responsible for:

- regulating major industry and waste
- treatment of contaminated land
- water quality and resources
- fisheries
- inland river, estuary and harbour navigations
- conservation and ecology

The EA is also responsible for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea. Lead local flood authorities (LLFAs) are responsible for managing the risk of flooding from surface water, groundwater and ordinary watercourses and lead on community recovery. The EA's broad responsibilities cover the following:

- Boating
- Chemicals

[24] https://www.gov.uk/government/organisations/environment-agency

- Climate change agreements
- Emissions and emissions trading
- Energy efficiency
- Environmental permits
- Environmental planning
- Environmental risk management
- Fisheries and rod licensing
- Flooding and coastal change
- Land management
- Low carbon energy
- Manufacturing
- Marine
- Nuclear regulation
- Oil spills
- Oil storage
- Onshore oil and gas
- Protected sites and species
- Rural grants and payments
- Services
- Waste
- Water
- Wildlife and habitat conservation