



Framework for Building Regulatory System for Kuwait

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ملخص البحث:

هناك معرفة غير كاملة في الممارسة والبحث المتعلق في منظومة النظام التشريعي للبناء في صناعة البناء والتشييد بالدولة، وهذه الصناعة التي تعتبر واحدة من القطاعات الاقتصادية الرئيسية في العديد من البلدان. من المهم جدا لتحديد النقص منظومة النظام التشريعي للبناء للدولة، من أجل تطوير النظام، وحل مشاكل قطاع الإنشاء والبناء، وذلك لرسم نظام قانون بناء متكامل وفعال لهذا الدولة. تحديد والتعرف على منظومة النظام التشريعي للبناء استند أساسا على تحديد المكونات الرئيسية النظام التشريعي للبناء لدولة نيوزيلندا من خلال دراسات البناء الوطنية والاستراتيجية، والذي تم توضيحه في الجزء رقم ٤ من هذا البحث. بعد ذلك تم إجراء دراسة مقارنة تفصيلية لنتائج ملخص النظام التشريعي للبناء لنيوزلندا في الجزء رقم ٤ مع مكونات لنظام لدولة الكويت في الجزء رقم ٥. وقد خلصت نتائج البحث بتحديد ١١ جزء للنظام التشريعي للبناء ، وهذه الأجزاء او المكونات هي (١) قانون البناء ، (٢) قرارات البناء ، (٣) إدارة وتطبيق قانون البناء والقرارات واللوائح ، (٤) أنظمة (كودات) البناء ، (٥) إدارة وتطبيق أنظمة (كودات) البناء ، (٦) معايير والبناء (٧) مواصفات البناء ، (٨) نظام ممارسة اعمال البناء ، (٩) نظام شهادات اعتماد مهن البناء ، (١٠) اختبار وإصدار شهادات مواد البناء ، (١١) الاسس القانونية للإنشاء في الدولة: مثل القانون المدني، العقود، أنظمة حل المنازعات والمطالبات والتأمين والسندات.

Abstract

There is incomplete knowledge in practice and research regards Building Regulatory System in the construction industry, which is one of the major economies sectors of many countries. It is very vital to identify Building Regulatory System shortage of a country, in order to advance the system, to solve problems of construction and building industries, to design a complete and effective building law for the country. The identification of BRS main components is mainly based on New Zealand' strategic national building and construction studies, which is explained in section 4. After that a comparative detailed study is conducted to match up the conclusion of BRS of New Zealand in section 4 with the different parameters and components of Kuwait BRS in section 5. The research concludes 11 building regulatory system main elements as (1) Building law (Act), (2) Building Decisions, (3) Administration and Enforcement of Building law and Decisions, (4) Building Regulations (Codes), (5) Administration and Enforcement of Building Regulations (Codes), (6) Standards, (7) Building Specifications, (8) Construction Code of Practice, (9) Construction Professions and Trades Certification, (10) Building Material Testing and Certification, (11) Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds.

1. Introduction

It is the responsibility of the government of Kuwait to set rules which organize the relation among the owners, design offices, contractors, building departments, and others. Building

codes (BC) or Building Regulations, and its administration and enforcement come under Building Regulatory System (BRS).

The effectiveness of the building regulatory system could be defined as the way the regulations contributed to the defined goals of the regulations (Meijer, Visscher, Sheridan, 2003). The three main objectives of BC/Building Regulations are protecting public health, safety and welfare (ICC, 2000). In the Netherlands the goals can be found in the starting points of the technical requirements such as safety, health, energy economy, utility and environment.

The research need to identify and create appropriate environment for the objectives of BC to be implemented in Kuwait. There is a need to identify and reach definition for BRS. In order to fulfill the objectives of BC in a country, there is a need for suitable regulatory and administrative environment that the BC can be practiced and enforced. The parameters of this environment are the components of Building law or Building Regulatory System.

1.1 Definition and History of BRS

Most of countries, cities, and towns around the world have some kind of Building Regulatory System to organize their building construction activities. Laws or acts declare the broad philosophy of regulatory system of a country. Law is the system of rules which a particular country or community recognizes as regulating the actions of its members and which it may enforce by the imposition of penalties. Regulation is a rule or directive made and maintained by an authority, or an action or process of regulating or being regulated like planning regulations. System is a set of connected things or parts forming a complex whole, in particular like a set of things working together as parts of a mechanism or an interconnecting network (Oxford University, 1999).

Historically, communities developed building regulations to address specific needs. Usually, these regulations developed by a team of experts from different fields and areas of building and construction sciences, and accompanied by legal and administrative expertise (AL-Fahad, 2004). Contents, volume, and advance of these systems are usually depending on needs, political systems, and level of technology of these countries.

1.2 The Parameters of BRS

Building regulations are legal requirements adopted by public policy makers to reflect as closely as possible society's minimum expectation from the built environment (CIB TG37, 2001). Building regulations are a part of the Building regulatory system (BRS). BRS is part of country regulatory system. BRS varies from one country to another due to the structure of governments, cultural differences, and other factors. In order for regulations to recognize their potential benefits, all parameters of regulatory system must be addressed. The BRS parameters include local government structure, public policy, education, technology, and general support framework. An example of support framework for BRS would be national approval system for products (CIB TG37, 2001).

According to The Productivity Commission, an institution of the Australian Government, building regulation has broad definition. The range of possible regulations that are associated is quite wide. The Building Code, prescriptive or performance, is a key element

of building regulations, relates mainly to technical specifications. Building regulation may be also includes or affected by building approval process, planning approval process, standard settings and accreditation of products, people and process, environmental regulation, some social regulations, some economic and financial regulations, and occupational health and safety regulation (The Productivity Commission, 2004).

Canada Mortgage and Housing Corporation (CMHC) defines Canada's construction system (CMHC, 2002). This system deals with construction, and operation of buildings in Canada. System parties' are owners, designers, general contractors, subcontractors, manufactures, standard development organization, the national government, province and territories, and municipalities.

The Chairman of Canadian Commission on Building and Fire Codes states that, there are needs to recognize importance of key elements in the construction other than building codes (Clemmensen1, 2003). These elements are a well-functioning market with knowledgeable, accountable and capable professionals; knowledgeable consumers who have access to the information; legal framework for the conduct of business; Reliable standards, testing and design guides, warranties and insurance; and education and training to enhance the knowledge and skills of those involved in the building process.

2. Problems and Improvement of BRS

2.1 The Problems of BRS

Laws and regulations are controversial topic. There is enormous terminological confusion about what constitute regulations for building or any other economic disciplines of a country or city (Adie, Thomas, 1987). The identification of what constitute regulations is crucial, because government regulations consist of rules designed to direct private sector behavior.

2.1.1 Breach of Codes Objectives

Improving BRS is very critical for the improvement of local code enforcement programs. Sometimes, the Government laws can create gaps and breaches in building codes coverage in a country or city. For example, the legislature in State of Montana has exempted entire classes of buildings from meeting minimum building and mechanical code requirements. Specifically, statutes exempt residential buildings containing less than five dwelling units or their attached to structures; exempt any farm or ranch building; exempt any private garage or private storage facility used only for the owner's own use; exempt mines and buildings on mine property; and exempt some petroleum refinery, pulp, and paper mill buildings. As a result of the statutory exemptions, these buildings do not have to be constructed or installed according to code. Because they are statutorily exempt from meeting codes, they are also exempt from enforcement by performing plan review or inspection. Therefore, there are no evidences that these buildings have basic minimum provisions considered necessary for protection of property, and for the health, safety, and welfare of the public (Legislative Audit Division, 1997).

2.1.2 Threaten Lives and Properties

In May 2006, insufficient building regulations for design and construction caused building basement to collapse during construction in Kuwait (Fig.1). According to Fire Department, the cause of collapse is due to performing an improper support of one of the basement walls, and the problems of vibration of site electrical generator which caused weak soil

(AL-Sherhan, 2006). The consequences of the accidents caused death of two worker and two injured one of them seriously injured. In addition, the accident causes huge financial loss. Reinforce concrete structures should design and construct by approved standards and qualified contractor. The problem in Kuwait is that there are no solid regulation and enforcement mechanism that can be enforced by building official to prevent these incidences. This leads to the conclusion that current Building Regulations in Kuwait are insufficient to protect public health, safety and general welfare.



Fig. 1: Killing of two construction workers and two seriously injured in basement collapse under construction in Desma town in May 7, 2006

2.2 The Need to Improve BRS

International Council for Research and Innovation in Building and Construction (CIB) formed TG37 on Performance Based Building Regulatory Systems. One of the key elements of future work of CIB TG37 is to provide linkage between research and regulations. Another element is the need to understand how the different stakeholders at BRS come together and how they are related. One of the key missions of CIB TG37 is the need to explore how scientific research can assist with drafting and revision of building regulations (CIB TG37, 2001).

It is very vital to identify the deficient and missing components and parameters of BRS of a country, in order to advance the system, and solve problem of construction and building industries. In this aspect, present investigation is primarily an attempt to identify the main components of the building regulatory system main and its framework system with reference to New Zealand and Kuwait. Thus, objectives of this research are as follow:

1. review New Zealand' strategic national building and construction studies
2. identify links between researches and regulations
3. identify New Zealand' building regulatory system main components
4. identify Kuwaiti building regulatory system components
5. measure and compare New Zealand' BRS, with Kuwait' BRS to define what constitutes building regulatory system components for a country

3. Methodology to Define BRS

Different research activities have been used to collect the necessary information and data related to this research. Among these are intensive studies reviews, and structured and non-structured interviews.

Benchmarking is a valuable tool to define the components of BRS. According to the Corporate Benchmarking Exchange “Benchmarking is the process of identifying, understanding, and adapting outstanding practices from organizations anywhere in the world to help your organization improve its performance... Any business process can be benchmarked”. (the Corporate Benchmarking Exchange ,2005). It is process by which one entity measures and compares itself against others, with the goals for outcomes being best-practice identification and performance improvement.

The identification of BRS main components is mainly based on New Zealand' strategic national building and construction studies, which is explained in section 4. After that a comparative detailed study is conducted to match up the conclusion of BRS in section 4 with the different parameters and components of Kuwait BRS in section 5. An intensive detailed study is performed for Kuwait BRS. As results of reviewing previous studies in BRS subject in section 1 and 2, and examining two different BRS of two different countries, we can reach a reasonable definition and clarity for what constitute BRS, which is explained in section 6 (Fig. 1).

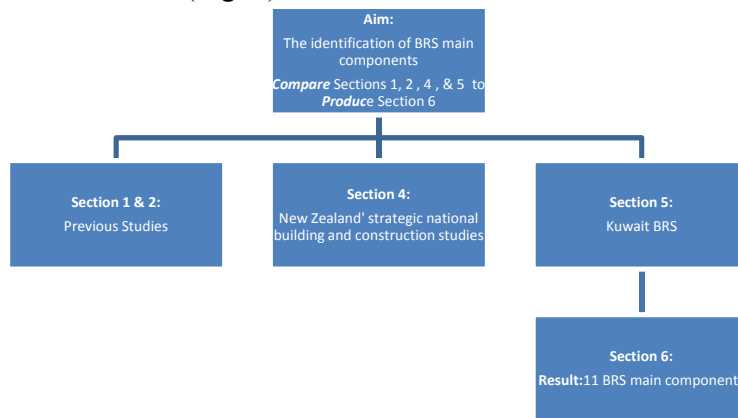


Fig. 1: Research Methodology

4. Identification of Other Country BRS Components (New Zealand)

The primary reason to select New Zealand is to understand the structure and the basic elements of Kuwait BRS by finding another country' BRS which it is advanced, convenient, and quick access to compare and inspire BRS of Kuwait. Other countries BRS can not be easily be transformed from one country to another. There is a major problem that occurs in the interpretation of differences in the BRS is they have to be seen and understood within a complex structure of history, tradition, culture, construction practice, etc (Meijer, Visscher, Sheridan, 2003).

Meijer, Visscher, and Sheridan (2003) conducted one of the major studies in the subject "A comparison of technical requirements in eight European countries". The study concludes that to decide on format selection of Building Codes structures and contents require

intensive and comprehensive studies for different volumetric code references. However, it is very important to go through the process of understanding the BRS in order to have effective Building Codes system for Kuwait. Because the effectiveness of a BRS could be defined as the way the regulations contribute to the defined goals of the regulations.

New Zealand has affordable detailed and intensive BRS studies on their national website. These studies cover many parts of BRS and its problems for insufficiencies. Moreover, New Zealand is one of the eight top most advanced countries in terms of building regulations which have adopted performance or objectives codes. These countries are United Kingdom, New Zealand, Sweden, The Netherlands, Norway, Australia, Canada, and USA (CSIC, 2004). Moreover, the US used the New Zealand code as the primary model to draft the U.S. performance code (Bukowski, 1997).

4.1 The New Zealand's Building Act

The New Zealand's 1991 Building Act describes what is covered by building controls and sets down the law for building work in New Zealand (Building Industry Authority, 2003). The Act applies to the construction, alteration, demolition and maintenance of new and existing buildings throughout New Zealand and includes Government building work. It consists of The Building Regulations 1992 which contain the mandatory New Zealand Building Code and particular details about the processing of building approvals. Also, it consists of The Approved Documents which are non-mandatory documents written by the Building Industry Authority to assist people to comply with the Building Code. The Act sets functions, powers, and duties of building industry authority, national building code, building certifiers, accreditation of building products and processes, legal proceedings and miscellaneous provisions, review of the building code, compliance documents, best practice guidance documents, accreditation and audit of building consent authorities, licensing of building practitioners, building warranty, dispute resolution procedures, insurance, bonds and guarantee funds, and enforcement (Building Industry Authority, 2003).

In summary, the scope of New Zealand's 1991 Building Act includes building controls, building regulations, approved documents, Building Industry Authority, National Building Code, building certifiers, accreditation of building products and processes, legal proceedings and miscellaneous provisions, development of the Building Code, compliance documents, best practice guidance documents, accreditation and audit of building consent authorities, licensing of building practitioners, building warranty, dispute resolution procedures, insurance, bonds, guarantee funds, and enforcement.

We can reorganize, re-clarify, and link the contents of The New Zealand's 1991 Building Act and BRS components equivalent terms as shown in Table 1. These equivalent terms are selected to unify and simplify the definitions and terminology of BRS components.

The New Zealand's 1991 Building Act	BRS Components Equivalent Terms
▪ Building Act	▪ Building law (Act)
▪ Building Code	▪ Building Regulations (Codes)
▪ Building controls, Building Industry Authority, building certifiers, development of the Building Code, compliance documents, and enforcement	▪ Administration and Enforcement of Building Regulations (Codes)
▪ Best practice guidance documents	▪ Construction Code of Practice ▪ Building Specifications
▪ Construction Professions and Trades Certification,	▪ Construction Professions and Trades Certification

accreditation and audit of building consent authorities, licensing of building practitioners	
▪ accreditation of building products and processes	▪ Building Material Testing and Certification
▪ <i>legal proceedings and miscellaneous provisions, dispute Resolution Procedures, insurance, bonds and guarantee funds, and building warranty</i>	▪ Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds

Table 1: BRS components equivalent terms related to The New Zealand's 1991 Building Act

4.2 The Study of Weather-tightness Problem

The Government New Zealand attempts to resolve Weather-tightness problem in New Zealand, by establishing Weather-tightness Overview Group (Building Industry Authority, 2002). The duties of the Group deals with investigation of failure of some buildings to deal with moisture (building and construction research problem), and other issues related to BRS. These issues are inadequacy in the Building Code, Approved Documents, inadequate documentation supplied for building consent, insufficient checking at building consent, during construction, and at code compliance stages, inadequacy of building products, materials and components, including evaluation of their suitability or fitness for purpose, insufficient technical information provided by manufacturer's literature and instructions, inadequate contract documentation, inadequate trade skills and supervision on site, lack of co-operation and sharing of responsibility on site. it investigates whether failures are attributable to deficiencies in the Building Act, the Building Regulations, or in the manner in which these are administered by the Authority or by Territorial Authorities (including the role of Building Certifiers), and whether the purposes and principles of the Act under Section 6 have been properly observed and followed by the Authority. In summary, the Group investigates the following issues:

1. Accreditation of inspection bodies.
2. Accreditation of building products and methods.
3. Assessing national costs and benefits of any building control
4. Establishing a registration system for building practitioners (engineers, architects, other building designers, draughts men, managers, builders and building sub-contractors.
5. Improve effectiveness of regulation by improved information and education to building officials.
6. Mandating building warranty
7. Enhancing dispute resolution procedure
8. Enhancing building regulation, enforcement and monitoring.

The Group found potential elements that cause the current failure of some buildings to deal with moisture in and through their exterior envelopes:

- Inadequacy in the Building Code and Approved Documents
- Inadequate documentation supplied for building consent
- Insufficient checking at building consent, during construction, and at Code compliance stages
- Inadequacy of building products, materials and components, including evaluation of their suitability or fitness for purpose

- Insufficient technical information provided by manufacturer's literature and instructions
- Inadequate contract documentation
- Inadequate trade skills and supervision on site
- Lack of co-operation and sharing of responsibility on site

To identify BRS components in New Zealand, we need to reorganize and re-clarify the contents of Weather-tightness study by linking it to equivalent terms of BRS components as shown in Table 2.

The study of Weather-tightness Problem	BRS Components Equivalent Terms
<ul style="list-style-type: none"> ▪ Inadequacy in the Building Code and Approved Documents 	<ul style="list-style-type: none"> ▪ Building Regulations (Codes) ▪ Construction Code of Practice ▪ Building Specifications ▪ Standards
<ul style="list-style-type: none"> ▪ Inadequate documentation supplied for building consent ▪ Insufficient checking at building consent, during construction, and at Code compliance stages ▪ Accreditation of inspection bodies. ▪ Assessing national costs and benefits of any building control ▪ Enhancing building regulation enforcement and monitoring 	<ul style="list-style-type: none"> ▪ Administration and Enforcement of Building Regulations (Codes)
<ul style="list-style-type: none"> ▪ Insufficient technical information provided by manufacturer's literature and instructions 	<ul style="list-style-type: none"> ▪ Building Specifications
<ul style="list-style-type: none"> ▪ Inadequate trade skills and supervision on site ▪ Accreditation of inspection bodies. ▪ Establishing of registration system for building practitioners (engineers, architects, other building designers, draught persons, managers builders and building sub-trades) ▪ Improve effectiveness of regulation by improving information and education to building officials 	<ul style="list-style-type: none"> ▪ Construction Professions and Trades Certification
<ul style="list-style-type: none"> ▪ Inadequacy of building products, materials and components, including evaluation of their suitability or fitness for purpose ▪ Accreditation of building products and methods 	<ul style="list-style-type: none"> ▪ Building Material Testing and Certification
<ul style="list-style-type: none"> ▪ Inadequate contract documentation ▪ Lack of co-operation and sharing of responsibility on site ▪ Mandating building warranty ▪ Enhancing disputed resolution procedure 	<ul style="list-style-type: none"> ▪ Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds

Table 2: BRS components equivalent terms related to the study of Weather-tightness Problem

4.3. Government Attempts to Improve Regulations of the Building Industry in New Zealand:

The Ministry of Economic Development (MOED) intended in designing a system of controls on the design and construction of buildings (Ministry of Economic Development,

2003). Such a system should make sure that the health and safety of people are protected, and their welfare is safeguarded.

A range of proposals are been submitted. These have been developed in collaboration with a number of industry groups and experts. MOED also considered issues raised in submissions to the Weather tightness Select Committee.

These proposals place emphasis on improving the quality of inputs into the building industry, better guidance on best-practice designs, methods and products, and more capable people. MOED is proposing to make it clearer where the responsibility lies for quality and workmanship with the people actually doing the work, and there will be much more stringent monitoring and enforcement of the Building Code. In summary, the study discussed the following points:

- Extending the Scope of the Building Act 1991
- Better Designs, Methods and Products
- Accrediting Inspectors and Certifiers
- Certifying Products and Processes
- Revision of Building Codes and Enforcement in New Zealand
- Assessing the Benefits and Costs of Controls
- Capable People
- Improving Information
- Putting Things Right
- Mandatory Building Warranty
- Enhanced Dispute Resolution Procedures
- When Building Professionals Fail
- Insurance, Bonds and Guarantee Funds
- Homeowner Warranty Insurance
- Guarantee Fund
- Bonds
- Enhancing Enforcement

The previous study which is to improve health and safety of people, and their welfare in New Zealand links needs for improvements to a set of building regulations. To identify BRS components in New Zealand, we need to reorganize and re-clarify the contents of this study by linking to BRS components equivalent terms as shown in Table 3.

The Study of Better Regulation of the Building Industry in New Zealand	BRS Components Equivalent Terms
<ul style="list-style-type: none"> ▪ Extending the Scope of the Building Act 1991 	<ul style="list-style-type: none"> ▪ Building law (Act)
<ul style="list-style-type: none"> ▪ Better Designs, Methods and Products 	<ul style="list-style-type: none"> ▪ Building Regulations (Codes) ▪ Construction Code of Practice ▪ Building Specifications ▪ Standards
<ul style="list-style-type: none"> ▪ Revision of Building Codes and Enforcement in New Zealand ▪ Enhancing Enforcement 	<ul style="list-style-type: none"> ▪ Administration and Enforcement of Building Regulations (Codes)
<ul style="list-style-type: none"> ▪ Accrediting Inspectors and Certifiers ▪ Capable People 	<ul style="list-style-type: none"> ▪ Construction Professions and Trades Certification ▪ Administration and Enforcement of Building Regulations (Codes)
<ul style="list-style-type: none"> ▪ Certifying Products and Processes ▪ Better Designs, Methods and Products 	<ul style="list-style-type: none"> ▪ Building Material Testing and Certification

<ul style="list-style-type: none"> ▪ Mandatory Building Warranty ▪ Enhanced Dispute Resolution Procedures ▪ When Building Professionals Fail ▪ Insurance, Bonds and Guarantee Funds ▪ Homeowner Warranty Insurance ▪ Guarantee Fund ▪ Bonds 	<ul style="list-style-type: none"> ▪ Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds
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Table 3: BRS components equivalent terms related to the study of Better Regulation of the Building Industry in New Zealand

At this stage we conclude 9 BRS components as part of New Zealand BRS. These components are:

1. Building law (Act)
2. Building Regulations (Codes)
3. Administration and Enforcement of Building Regulations (Codes)
4. Standards
5. Building Specifications
6. Construction Code of Practice
7. Construction Professions and Trades Certification
8. Building Material Testing and Certification
9. Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds.

At this stage there is a need for a comparative study to match up the conclusion of New Zealand BRS with the different parameters and components of another country. Thus, Kuwait BRS has been chosen in this study. An intensive detailed study has been performed for Kuwait BRS components which are coming next.

5. Identification of Kuwait' BRS Components

Kuwait as well as many other countries has kind of components and structure of BRS. The following sections describe structure, components, and different parameters of Kuwaiti BRS in details.

5.1 Building Law (Acts)

The Kuwait System of Building Regulation draws most of its authority from articles no. 20 and 15 of Kuwait Municipality Law 1972 (Kuwait Nation Parliament,1972) that sought to establish one system for Kuwait and make the Kuwait Municipality Law the dominant Law in the control of building. The Law applies articles of the constitutions to daily life. It is strategic and establishes intentions for responding to needs affecting society in general (Fig.2).



Fig.2: Building Control Police Powers

Article no. 19 from Kuwait Municipality Law shows that Municipality responsibilities to the work for the growth and advancement of building construction and public health, article no. 20 to organize building permit, and article no. 34 to the development of rules and principles of building construction.

5.2 Building Decisions

Kuwait Municipality president made his decision no. 30 of 1985 in organizing building works by the law no. 15 of 1972 to organize building in Kuwait, to preserve the buildings and citizens from dangers concerning the public safety inside the country (Kuwait Municipality, 1985). The Municipal Council issue decisions to divide the lands for buildings in 1966, and adjusted in 1972, preceded by law no. 33 of 64 concerning property ownership and the general beneficiary.

5.3 Administration and Enforcement of Building law and Decisions

These are criteria that provide administration and enforcement framework for Building law and Decisions in terms of identifying Kuwait Municipality authority to implement development regulations. Kuwait Municipality and Parliament President, members of Municipality Parliament, and Kuwait Municipality Manger and his deputies, are the administration and enforcement executives of Building Law and Decisions.

5.4 Building Regulations (Codes)

Under Kuwait Municipality Law 1972, Kuwait Municipality Parliament issued the Building Regulation 1985, and some other decisions related to administration and enforcement of building regulation.

The Building Regulation 1985 (Kuwait Municipality, 1985) is limited to administration of work and simple general technical requirements. Regulation articles are general provisions to building use, building permits, design insurance, stop work order, construction supervision, work order and simple regulation of small contractors, and design/supervision offices. It has more zoning requirements and aspects than building or construction regulation.

At present, a modern building code is under development in Kuwait (Al-Fahad, 2001; Kuwait Municipality, 2001), through Building Code Project initiated at Kuwait Municipality. At this time, there isn't a complete Building Code, similar to the current

building system that exist in US, Canada, U.K., Australia, and some other countries. There are only simple and introductory building regulations as described before.

5.4.1 Regulation of Professional Practice and Workmanship Standards

Article 5.1 of Building Regulation 1985 states that any owner or individual who intends to construct building or structure should follow standards design, construction methods, and workmanship (Kuwait Municipality, 1985). However, many building officials find the definition of standards design, construction methods, and workmanship ambiguous.

5.4.2 Current Building Regulations (Codes) at Kuwait

The following are the main components of current Building Regulations and Codes at Kuwait (General Administration of Fire Fighting,1996; Ministry of Electricity of Water,1983, 1999):

- Building Regulation 1985 (Kuwait Municipality decision)
- Protecting Building from Fire Regulations (The General Administration of Fire Fighting)
- Electrical and Energy Conservation Regulations (Ministry of Electricity and Water), the following is list of Publications for Regulations and Codes of Practice:
- Regulations for Electrical Installations (Fourth Edition 1983)
- Procedures for Approval of Electrical and A/C Drawings and connection of power supply for construction and buildings projects. (1st Edition 1983)
- Electrical load form and explanatory memo (2nd Edition 1983)
- Regulations for testing of Electrical installations before connection of power supply (1st Edition 1983)
- General Guidelines for Energy Conservation in building (2nd. Edition 1983)
- Code of Practice for Energy Conservation in Kuwait building and Appendices (1st Edition 1983)
- Rules and Regulations for design of A/C System and Equipment. (3rd Edition 1983)
- Rules and Regulations for handing over Engineering Services (Electrical and Mechanical) to the Maintenance Authority. 2nd Edition 1983
- General specification for electrical installations 3rd edition 1983

5.5 Administration and Enforcement of Building Regulations (Codes)

Every state has its own style of administration according to the social, political, and democratic conditions. Centralization and decentralization are the reflections of the administration in the modern state. Factors affect the local administration are determined land area, lawful, local authority, private budget, and administrative, and implementing sets for local authority.

The process of administering Building Regulations is organized by building officials at Kuwait Municipality (KM), the General Administration of Fire Fighting (GAFF), and Ministry of Electricity and Water (MEW), who are enforcing, controlling and applying building regulations through their administrative system, at their institutions and authorities.

Usually, KM, GAFF, and MEW have Building and Inspection Department as part of their organization system to execute these regulations and works. The administrative characteristics of Building and Inspection Department consist of the following (ICC, 2000): Department Organization, Department Officials, Development and Upgrading of Building

Codes, Building Plan Review and Permits, Building Inspection, Violations, Certificate of Occupancy, Board of Appeal and Other related characteristics.

The administrative structure of building regulations in Kuwait consists of permit issues, plans review, and site inspection.

5.6 Standards

Public Authority for Industry, and some other government agencies, have published their standards for building and other structures.

5.7 Building Specifications

Public Authority for Industry, Ministry of public works, and Ministry of Housing have published their specifications for building and other structures.

5.8 Construction Code of Practice

Kuwait Institute for Scientific research a government facility produced few approved construction methods and procedures that can be considered as code of practice guidance documents.

5.9 Construction Professions and Trades certification

Construction professions and trades usually consist of the following:

Architects, Engineers, and Surveyors

Small Contractors

Construction Trades

Building Regulations (Codes) Officials

In Kuwait, there isn't clear or defined professions and trades law.

5.9.1 Architects, Engineers, and Surveyors

Kuwaiti laws authorize Ministry of Higher Education to approve all B.S. and two years' diploma certificates for architects, engineers, and surveyors. This allows all architects, engineers, and surveyors to conduct any kind of works. Also, this allows civil engineers to work as surveyors.

Kuwait Society for Engineers has started certification program lately for architects and engineers. However, this program is not mandatory, that means any architect or engineer can work in Kuwait without Kuwait Society for Engineers certification.

5.9.2 Small Contractors

There is no article in Kuwait Municipality Law 1972, or any other law in the country, which enforces certification criteria to exam or test small contractors, based on scientific methods, by testing their skills theoretically and practically. There is only registration regulation at Kuwait Municipality, and Ministry of Trade and Industry, which require small contractor establishment or company to show evidence of work insurance and financial bond. In addition, many individuals work as small contractor without having government registration.

5.9.3 Construction Trades

There is no article in Kuwait Municipality Law 1972, or any other law in the country, which enforces certification criteria to exam or test construction skilled labors and journeymen, based on scientific methods, by testing their skills theoretically and practically. Moreover, there is no classification made for these trades in Kuwait

Municipality, or Ministry of Social and Labor Affairs, or Ministry of Trade and Industry. Unfortunately, Ministry of Social and Labor Affairs in early seventies, produced complete trade classification manual, but it has been cancelled and ignored from their regulation system.

Consequently, current status for construction trades in Kuwait is in great chaos. It is one of great challenge to find the right skilled labor or labor for construction works. There isn't any approved governmental identification card for any construction worker in Kuwait to show his or her trade type or classification.

5.9.4 Building Regulations (Codes) Officials

Kuwaiti laws authorize Ministry of Higher Education to approve all Bachelor of Science and two-year diploma certificates for architects, engineers, and surveyors. This allows all architects, engineers, and surveyors to conduct any kind of works regard building regulations.

Usually, the Training Department at Kuwait Municipality conducts special training in the area of building regulations, for their plan reviewer, inspectors, and other building officials. However, this program is not mandatory, that means any Bachelor of Science and two-year diploma certificates for architects, engineers, and surveyors can work in Kuwait Municipality without special training.

5.10 Building Material and Equipment Testing and Certification

There are some centers for building material and equipment testing and certification in Kuwait

5.11 Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds

There is Civil Law published by Ministry of Justice which organize contracts, dispute, claims, insurance and bonds.

6. Infrastructure of BRS Main Components

We can conclude from previous analysis of the previous studies in Section 2, CIB TG37 publication, The Productivity Commission study, the studies of Building Act, construction problems of New Zealand and BRS of Kuwait which clearly shows and define the issue and components of BRS. CIB TG37 stated that BRS varies from one country to another, and mentioned that national approval system for products is one of its parameters.

Therefore, the definition of contents of BRS can be summarized as follow:

1. Building law (Act)
2. Building Decisions
3. Administration and Enforcement of Building law and Decisions
4. Building Regulations (Codes)
5. Administration and Enforcement of Building Regulations (Codes)
6. Standards
7. Building Specifications
8. Construction Code of Practice
9. Construction Professions and Trades Certification
10. Building Material and Equipment Testing and Certification
11. Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds.

There are other regulations and factors which have relationships with BRS. These include social regulations, economic regulations, financial regulations, well-functioning market, and knowledgeable consumers. However, it has been omitted as primary component of BRS. The only components accepted as part of BRS are the ones we can create to them regulations within stakeholders of the construction process, and the built environment sector of a country. For example, to create contractor licensing, we need make an article in a law, and administrative decision to proceed for fulfillment. Other regulations and factors can be part of primary components especially in the administration provisions.

Table 4 show more details about BRS components, makers, and users. After that, a detailed description of BRS components is presented.

No.	BRS Elements	BRS Element Maker	BRS Element Users
1	Building law (Act)	Nation or country Parliament, President of the country	Municipality or City Parliament, President, Members, General Director, General Director Deputies
2	Building Decisions	Municipality or City Parliament, President, Members, General Director, General Director Deputies	All building officials, building permit seeker and renewal
3	Administration and Enforcement of Building law and Decisions	Municipality or City Parliament, President, Members, General Director, General Director Deputies	All building officials, building permit seeker and renewal
4	Building Regulations (Codes)	Municipality or City Parliament, President, Members, General Director, General Director Deputies	All building officials, building permit seeker and renewal
5	Administration and Enforcement of Building Regulations (Codes)	Mangers and authorized officials from Building Department, Building Safety Department, & Building Inspection Department	All building officials, building permit seeker and renewal
6	Standards	Government associations and authorized agencies (i.e. Ministry of Trading and Commerce, Ministry of Industry)	All building officials, building permit seeker and renewal
7	Building Specifications	Government associations and authorized agencies (i.e. Ministry of Trading and Commerce, Ministry of Industry)	All building officials, building permit seeker and renewal
8	Construction Code of Practice	Municipality or City Parliament, President, Members, General Director, General Director Deputies, Government associations and authorized agencies (i.e. Ministry of Trading and Commerce, Ministry of Industry)	All building officials, building permit seeker and renewal
9	Construction Professions and Trades Certification	Municipality or City Parliament, President, Members, General Director, General Director Deputies, Government associations and authorized agencies (i.e. Ministry of Trading and Commerce, Ministry of Industry)	All building officials, building permit seeker and renewal
10	Building Material Testing and Equipments Certification	Municipality or City Parliament, President, Members, General Director, General Director Deputies, Government associations and authorized agencies (i.e. Ministry of Trading and Commerce, Ministry of Industry)	All building officials, building permit seeker and renewal
11	Construction Legal Principles: Civil	Nation Parliament, President of the country, lawyers, contract and claim specialists, and	All building officials, building permit seeker and renewal

No.	BRS Elements	BRS Element Maker	BRS Element Users
	Law, Contracts, Dispute, Claims, Insurance and Bonds	insurance companies	

Table 4: The relationship between BRS elements, makers, and users

7. Conclusions

Building Regulatory System consists of potential range of possible regulations. The research identified main components of BRS by analyzing New Zealand' strategic national building and construction studies, and Kuwaiti Building Regulatory System, by setting links between researches and regulations. The research concludes 11 main components for the BRS as follows:

"1-Building law (Act), 2-Building Decisions ,3- Administration and Enforcement of Building law and Decisions, 4-Building Regulations (Codes), 5-Administration and Enforcement of Building Regulations (Codes), 6-Standards, 7-Building Specifications, 8-Construction Code of Practice, 9-Construction Professions and Trades Certification, 10-Building Material Testing and Certification, 11-Construction Legal Principles: Civil Law, Contracts, Dispute, Claims, Insurance and Bonds."

To regulate and mandate BC in Kuwait or any other country, you need an article at the Building Law to state this necessity. Building Decision component is significant to translate article mandating BC in the building law to be implemented in practice. It is an administrative tool. Administration and Enforcement of Building law and Decisions component is the administrative criteria for Building Decision. A&EBC component is the criteria that provide administration and enforcement framework for Building Codes. Building Specifications, Standards, and Construction Code of Practice are very important components of BRS to be supportive for the BC. Since Building Codes contain many referenced Standards, Standards are very important component of BRS, as Standards are detailed documents which are not available in codes. Standards gives details about construction materials, design and engineering requirements, installation methods, or testing practices. Building Specifications and Construction Code of Practice are another components for BRS, because Building Specifications are a detailed, exact statement of particulars, especially statements prescribing materials and methods, and quality of work for a specific project. Construction Code of Practice is intended as a guide to good practice to apply construction methods and procedures. These detailed documents are not available in codes.

Construction Professions and Trades Certification is another component to produce qualified professionals that can understand the detailed sophisticated technology that exist in BC. Building Material Testing and Certification is important because supplier, provider, or manufacture can show his customers objective evidence that his products and services meet international or/and nationally recognized codes and standards of quality and performance. Material testing and inspection is very critical in the process of BC enforcement. Construction Legal Principles such as Civil Law, contracts, dispute, claims, insurance and bonds is very important component. Civil Law is the system of law concerned with private relations between members of a community, which has construction

legal articles (Oxford University Press, 1999). BC are often used by the courts as evidence in determining disputes. BC are mandatory and enforced by law, so that professionals don't need to reference to building codes in building contracts. BC have strong relationship with insurance and warranties. BC has been seriously developed in The US, because of the requirements of the insurance companies. Gwin and Ong (2000) concluded that building codes should be implemented for building components exposed to costly defects. Civil Law has many law articles related to contracts, insurance and bonds.

6. Abbreviations

- Administration of Fire Fighting (GAFF)
- Alternative Dispute Resolution (ADR)
- American Society for Testing and Materials (ASTM)
- Building Codes (BC)
- Building regulatory system (BRS)
- Canada Mortgage and Housing Corporation (CMHC)
- Factory Mutual Research (FM)
- International Council for Research and Innovation in Building and Construction (CIB)
- Kuwait Municipality (KM)
- Ministry of Economic Development (MOED)
- Ministry of Electricity and Water (MEW)
- Underwriters Laboratories Inc. (UL)

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