Conseil Européen des Economistes de la Construction
The European Council of Construction Economists

Code of Measurement for Cost Planning

The Code provides a standard basis for the sub-division of costs and for measurement of basic quantities of buildings for pan-European budgeting, comparison and analysis at management level.

English Language Edition
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European Council of Construction Economists (CEEC)

Code of Measurement for Cost Planning

Introduction

Conseil European des Economistes de la Construction/The European Council of Construction Economists (CEEC) was formed by the coming together of representatives of various national institutions representing the field of construction economics (quantity surveying to the English speaking nations) in their own countries with the aim of promoting the profession at a European level.

Many of the member organisations have standards for analysing project costs into elements so that they can be used for benchmarking and structuring robust order of cost estimates for future projects.

For this purpose an element is defined as: ‘A major physical part of a building that fulfils a specific function or functions, irrespective of its design, specification or construction’.

While the purpose and the basic principles behind the national classifications is the same they differ in detail.

Two important aims of the CEEC are harmonisation of working methods and the exchange of information. Harmonisation doesn't have to mean we all end up doing things in exactly the same way. The Code of Measurement for Cost Planning creates a co-ordinated overall framework, enabling exchange of data at high level, while still permitting differing national approaches and new innovative local developments.

Scope

The Code provides a standard basis for the sub-division of costs and for measurement of basic quantities of buildings for pan-European budgeting, comparison and analysis at management level. The structure is organised to permit the use of existing national classifications at a more detailed level of information (subsidiarity principle).

The Code covers the Elements of the building, non-elemental cost categories (e.g. site overheads, design fees), cost categories for costs-in-use (e.g. maintenance), site acquisition and project funding.

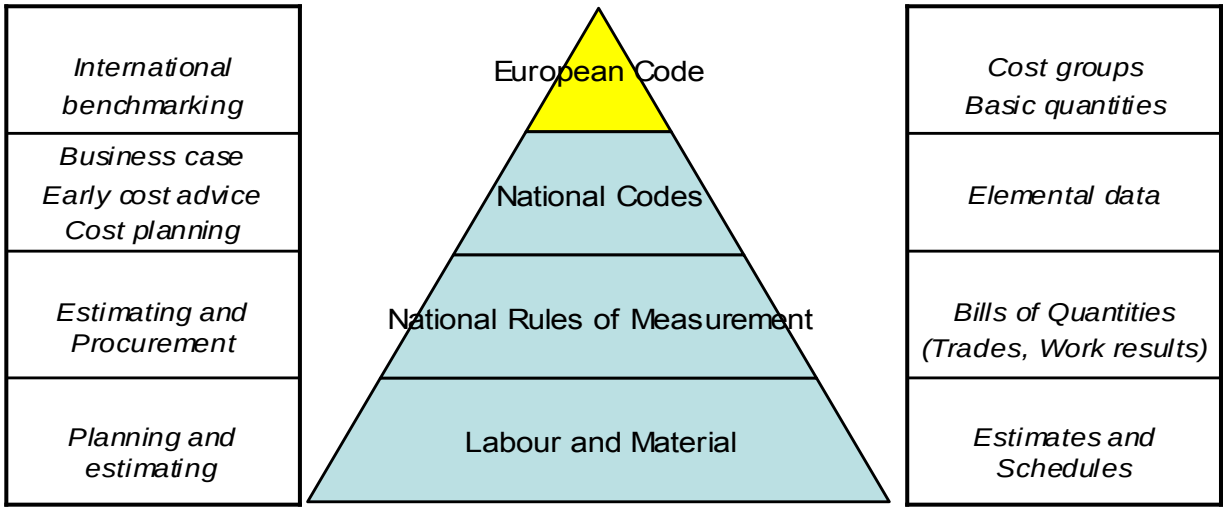
Not all Cost Groups or Basic Quantities are used in every country. Where Cost Groups or Basic Quantities are not used this will be clearly identified in the national mapping to the code to avoid misunderstandings on the scope and content.

Definitions of basic quantities have been restricted to site areas, floor areas and the principles of functional units. Elemental quantities have not been defined and local definitions shall be used for analysis of elemental unit rates.

The code is intended to allow consistent and reliable comparisons to be made between costs presented in national formats and to allow users to understand the scope and measurement of costs presented in a national form of cost analysis.

Members of CEEC and other organisations have provided mapping of their national elemental cost classification systems to the CEEC cost codes. These are available on the CEEC website. http://www.ceecorg.eu/

Code of Measurement for Cost Planning
hierarchy of cost data classification



CEEC Code of Measurement for Cost Planning

List of cost groups and basic quantities

Cost groups

CONSTRUCTION COSTS and FEES

#01 Substructure

#02 External superstructure/envelope

#03 Internal superstructure

#04 Internal finishings

#05 Services installations

#06 Special equipment and installations

#07 Furniture and fittings

#08 Prefabricated buildings, building units and pods

#09 Site and external works

#10 Site preparation

#11 Construction site overheads and management (Preliminaries)

#12 Design and project team fees

#13 Taxes on construction costs and Fees

INCIDENTAL COSTS

#14 Ancillary costs and charges

#15 Project budget risk allowances (contingencies)

#16 Taxes on incidental costs

COSTS IN USE

#17 Maintenance

#18 Operation

#19 End of life

#20 Taxes on cost in use

SITE ACQUISITION

#21 Site acquisition costs

#22 Taxes on site acquisition

PROJECT FUNDING

#23 Finance

#24 Grants and subsidies

#25 Taxes on project funding

SITE

#01 m2 Site area

#02 m2 Footprint area

FLOOR AREAS

#03 m2 Floor area not fully enclosed

#04 m2 Gross external floor area

#05 m2 Gross internal floor area

#06 m2 Area of internal divisions

#07 m2 Area ancillary to main function

#08 m2 Ancillary area for services

#09 m2 Circulation area

#10 m2 Usable floor area

FUNCTIONAL UNITS

#11 no. Primary functional units

#12 no. Secondary functional units

CEEC Code of Measurement for Cost Planning
Cost groups

Principles for cost information

Cost information should always include the base date, exchange rates and, in the case of costs in use, the period in time being evaluated and any discount rate applied. In addition the project time scale for construction including planning and approval should be stated.

Costs will generally be placed in the most suitable category. Minor deviations due to restrictions of national coding should be noted.

In some countries it may be difficult to subdivide costs into the cost groups. In these cases groups may be combined for analysis purposes.

The limits of any costs (e.g. costs within site boundaries) should be clearly stated.

Note: For benchmarking purposes the cost of the building sould be the total of Cost Groups 01-08, with Construction site overheads and management (Cost Group 11) and Design and project team fees (Cost Group 12) allocated by cost (ie as a percentage of Cost Groups 01-10), divided by a floor area to a stated definition from Basic Quantities. See Example Page 11

CONSTRUCTION COSTS and FEES

#01 Substructure

Definition

All building work up to the structural upper surface of the lowest floor slab including basement excavation and filling, pumping, supports to sides of excavation, foundations, walls below lowest floor slab, excluding drainage (see cost groups 05 and 09). Note: Where the cost of the basement walls cannot be separated from the substructure they should be included here. Note Where cost of drainage under the building cannot be separated from the substructure it should be included here)

#02 External superstructure/envelope

Definition

The building envelope above the substructure including roofs (together with associated beams, balustrades and the like), external walls (together with associated columns and beams), external windows (with external sun protection), external doors and external finishes but excluding internal finishes. Solar/rain screening and facade access/cleaning systems. Note: Where the costs of suspended or cantilevered balconies, or framed members (columns and beams) to external structures cannot be identified separately they should be included in group 03. Note: Where the cost of the basement walls cannot be separated from the substructure they should be included in group 01.

#03 Internal superstructure

Definition

All remaining superstructure including suspended floors and balconies (together with any associated columns and beams, topping concrete and the like), stairs, internal walls and partitions, internal columns and beams, internal windows and doors, internal screens, balustrades and handrails but excluding internal finishes. Note: On refurbishment contracts include general stripping out of partitions, ceilings, finishes, fittings. etc. where these cannot be allocated to separate elements. Note: Where the costs of suspended or cantilevered balconies, or framed members to external structures cannot be identified separately they should be included here. Note: Where the cost of internal partitions cannot be separated from the finishes they should be included in group 04.

#04 Internal finishings

Definition

Internal floor, wall and ceiling finishes including screeds, raised floors, internal panelling and cladding, suspended ceilings, decoration and finishes to balconies. Note: Where the cost of internal partitions cannot be separated from the finishes they should be included here.

#05 Services installations

Definition

Mechanical, electrical and public health installations including heating, cooling, ventilation and sanitary installations, lift and conveyor, power, lighting, energy production systems, telecommunication data and IT installations, fire and security systems, building management systems and the appropriate control systems and commissioning.

Special equipment and installations

Definition

Special mechanical and electrical installations in relation to the use of the building including fixed and mobile equipment, production installations, professional kitchen equipment, cold stores and refrigeration, and the appropriate commissioning.

Furniture and fittings

Definition

Fixed and mobile furniture and fittings including cupboards, gymnasium equipment, signage, curtains, loose carpets, consumable stores and artwork.

#08 Prefabricated buildings, building units and pods

Definition

Prefabricated volumetric and flat pack buildings, units and rooms, the cost of which cannot be allocated to groups 01 to 07. Includes complete buildings, building units (e.g. boiler rooms, hotel rooms, medical theatre suites) and rooms (e.g. bathroom pods).

#09 Site and external works

Definition

Work to site outside of buildings including, external services and service connections, drainage, external lighting, paving, soft landscaping and planting, walls and fencing and minor buildings and civil engineering works.

#10 Site preparation

Definition

Work to provide a clear site for construction works including demolition, decontamination, temporary support to adjacent structures. General site dewatering, soil stabilisation, gas venting etc. Archaeological investigation, biodiversity measures. Site clearance and preparatory groundworks to form new contours.

#11 Construction site overheads and management (Preliminaries)

Definition

General site installations and temporary works which are not incorporated in the appropriate Cost Groups including cranes, temporary site accommodation, scaffolding, setting out, drying out, cleaning work, site security, health and safety measures, temporary enclosures, temporary works, contractors' on site management and contractors' risk, insurance bonds and guarantees. Note: Include contractor's general overheads and profit where these are shown separately. Note: Where site management is comissioned separately from construction it should be included in group 12.

#12 Design and project team fees

Definition

Fees for design and project delivery including those for architect, structural, mechanical and electrical engineers, other designers, (including contractors design fees), construction economists, quantity surveyors, project managers, town and country planners, employers agent, surveyors, project health and safety advisors, environmental impact advisors and specialist planners, but excluding legal fees. includes the cost of client's Building Information Model. Note: Where site management is comissioned separately from construction it should be included here, where it is part of the contractor's construction cost it should be included in group 11.

#13 Taxes on construction costs and Fees

Definition

Value added tax and any other taxes on construction costs and Fees.

INCIDENTAL COSTS

#14 Ancillary costs and charges

Definition

General incidental costs to the client including the costs of physical models, documentation, copies and drawings, laying of foundation stone, topping out, inauguration, competitions, permits, planning, connections for utilities, insurances, third party compensation, client's involvement, legal fees in association with construction, compensation payments due to statuary requirements, defects insurance, marketing costs, etc.

#15 Project budget risk allowances (contingencies)

Definition

Contingency allowances included in the budget for risk items such as design development risk, construction risk, employer's change risk and inflation (excluding contractors inflation risk),

#16 Taxes on incidental costs

Definition

Value added tax and any other taxes on incidental costs.

CEEC Code of Measurement for Cost Planning
Cost groups

COSTS IN USE

#17 Maintenance

Definition

Costs in use for major replacements, minor replacements, repairs, maintenance, servicing of mechanical and electrical services and redecoration

#18 Operation

Definition

Cost in use for cleaning, water, energy, waste disposal, insurance, inspection, administration, property management and caretaking.

#19 End of life

Definition

Cost of sale or other disposal of property, including decommissioning, disposal inspections, reinstatement to meet contractual requirements, demolition.

#20 Taxes on cost in use

Definition

Value added tax and any other taxes on costs in use.

SITE ACQUISITION

#21 Site acquisition costs

Definition

Cost of site including all cost associated with the acquisition, purchase or lease of the site and legal fees.

#22 Taxes on site acquisition

Definition

All taxes in association with site acquisition

PROJECT FUNDING

#23 Finance

Definition

The cost to the client of finance including interest on loans, bank charges and mortgage costs.

#24 Grants and subsidies

Definition

Any financial grants and contributions payable to the project.

#25 Taxes on project funding

Definition

All taxes in association with project funding and finance

CEEC Code of Measurement for Cost Planning
Basic quantities definitions

Principles of measurement
All quantities shall be measured net up to the appropriate finished surfaces of construction. Unless otherwise stated, sloping areas shall be measured on the horizontal plain.

SITE

#01 m2 Site area

Definition
The area within the legal site boundaries measured on a horizontal plain and including areas of buildings, external works and untreated areas.
SFCA/NRM 1
m2 Site area

#02 m2 Footprint area

Definition
Area of the finished site, which is penetrated by buildings
SFCA/NRM 1
m2 Building footprint

FLOOR AREAS

#03 m2 Floor area not fully enclosed

Definition
The area of open sided balconies, canopies, cloisters (covered walkways), fire escapes, open parking areas, usable roof areas, roof terraces and the like.
SFCA
m2 Floor spaces not enclosed

m2 Gross external floor area

Definition
The area of all floor space which is covered and enclosed to its full height, including the area of basements, measured to the outside face of outside walls and including the area of all internal walls, columns and the like measured at each floor level, excluding floor area not fully enclosed (see #03).
CoMP
m2 Gross External Area (GEA)

m2 Gross internal floor area

Definition
Gross external floor area less the area occupied by the external walls
CoMP/SFCA/NRM1
m2 Gross Internal Area (GIA) also refered to as Gross Internal Floor Area (GIFA)

#06 m2 Area of internal divisions

Definition
Internal structural and non structural walls, partitions, columns, piers, chimneys, chimney breasts, other projections, vertical ducts and the like.
Note: this area includes partitions, which maybe nationally defined as lettable areas.
SFCA
m2 Internal divisions floor area

#07 m2 Area ancillary to main function

Definition
Toilet areas, toilet lobbies, cloakrooms, bathrooms, cleaners' rooms, bomb shelters and the like supplementary to the main function of the building.
SFCA
m2 Ancillary floor area (includes Ancillary area for services #08)

#08 m2 Ancillary area for services

Definition
Lift rooms, plant rooms, tank rooms, fuel store, meter rooms and the like; and space occupied by permanent and continuous air-conditioning, heating or cooling apparatus and ducting.
SFCA
m2 Included in Ancillary floor area #07

#09 m2 Circulation area

Definition
Area of entrance halls, corridors, staircases, lift wells, lift lobbies, connecting links, fire corridors, smoke lobbies and other areas where used in common by occupiers.
SFCA
m2 Circulation floor area

#10 m2 Usable floor area

Definition

Gross internal floor area excluding all internal divisions, ancillary area for services, area ancillary to main function and circulation areas.
SFCA
m2 Usable floor area

FUNCTIONAL UNITS

Definition
Functional units are typical units related to the particular use of a building.
Examples (not limited to):
- units of accomodation (domestic dwellings)
- numbers of students (schools)
- numbers of hospital beds (health care)
- number of hotel rooms
- seating places (theatres, restraunts and concert halls)
- parking spaces (covered car parks).

A building may have two or more functional units, e.g. Houses expressed as cost per person or bedroom and office by desk spaces or usable area.

#11 no. Primary functional units

#12 no. Secondary functional units

CEEC Code of Measurement for Cost Planning

Basic quantities relationship

Schema of floor areas

#01 Site area

#02 Footprint area

#03 Floor area not fully enclosed

<table>
<tr><td colspan="5">#04 Gross external floor area</td></tr>
<tr><td colspan="4">#05 Gross internal floor area</td><td>Area occupied by the external walls</td></tr>
<tr><td>#06 area of internal divisions</td><td>#07 Area ancillary to main function</td><td>#08 Ancillary area for services</td><td>#09 Circulation area</td><td>#10 Usable floor area</td></tr>
</table>

#11 Primary functional units

#12 Secondary functional units

CEEC Code of Measurement for Cost Planning

Standard form of cost analysis

	Project reference		
	Country of origin		
	Location		
	Currency / Price base date		
	Evaluation period (from / to)		
	Period for costs in use (years)		
	Quantity used for analysis		
	Refurbishment area (%)		%
	Programme		
	Description of works and quality		

	Basic quantities		
#01	Site area		m2
#02	Footprint area		m2
#03	Floor area not fully enclosed		m2
	Gross external floor area		m2
	Gross internal floor area		m2
#06	Area of internal divisions		m2
	Area ancillary to main function		m2
	Ancillary area for services		m2
	Circulation area		m2
	Usable floor area		m2
	Primary functional units		
#12	Secondary functional units		

	Costs	**Total cost**	**Cost/unit**
	CONSTRUCTION COSTS and FEES		
#01	Substructure		
#02	External superstructure/envelope		
#03	Internal superstructure		
#04	Internal finishings		
#05	Services installations		
#06	Special equipment and installations		
#07	Furniture and fittings		
#08	Prefabricated buildings, building units		
#09	Site and external works		
#10	Site preparation		
#11	Construction site overheads and		
#12	Design and project team fees		
#13	Taxes on construction costs and Fees		
	INCIDENTAL COSTS		
#14	sts and charges		
#15	Project budget risk allowances		
#16	Taxes on incidental costs		
	COSTS IN USE (Total years)		
	Maintenance		
#18	Operation		
#19	End of life		
#20	Taxes on cost in use		
	SITE ACQUISITION		
#21	Site acquisition costs		
#22	Taxes on site acquisition		
	PROJECT FUNDING		
#23	Finance		
#24	Grants and subsidies		
#25	Taxes on project funding		
	TOTAL		

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Example of calculation for benchmarking

Notes

All the current contributors to CEEC can find a common benchmark by taking the total of of the building construction (cost groups 01 to 08) and adding a proportion of construction site overheads and management and design and project team fees (cost groups 09 and 10 calculated as a percenage of cost groups 01 to 10). Where other groups of cost categories are used as a benchmark this should be clearly defined.

Benchmark building costs and fees

Currency to be stated

Construction costs anf fees

Cost Group 01	Substructure
Cost Group 02	External superstructure/envelope
Cost Group 03	Internal superstructure
Cost Group 04	Internal finishings
Cost Group 05	Services installations
Cost Group 06	Special equipment and installations
Cost Group 07	Furniture and fittings
Cost Group 08	Prefabricated buildings, building units and pods
Sub-Total ***A - Building*** (Cost Groups 01 to 08))	
Cost Group 09	Site and external works
Cost Group 10	Site preparation
Sub-Total ***B - External works*** (Cost Groups 09 and 10)	
Sub-Total ***C - Construction works: Building and External works*** (Cost Groups 01 to 10)	
Cost group 11	Construction site overheads and management (Preliminaries)
Cost group 12	Design and project team fees
Sub-Total ***D*** **- Overheads and fees** (Cost Groups 11 and 12)	
Total ***E - Construction works and Overheads and fees*** (Cost groups 01 to 12)	

Overheads and fees as percentage of Construction costs

Percentage ***1***	(Sub-Total ***D*** / Sub-Total ***C****)*100*

Building and Overheads and fees

Total ***A***	
Proportion of Total ***D***	Total ***A*** * Percentage ***1***
Total ***F***	Total ***A*** + Total ***A*** * Percentage ***1***

Building and fees benchmark

Total ***F***	
Floor Area ***X***	The Floor area, defined from CEEC Code basic quantity definitions, and unit (usually m2) to be stated
CEEC Benchmark	Total F / ***X*** m2

CEEC Code of Measurement for Cost Planning

CEEC Institutional members

Union Belge des Quantity Surveyors (UBQS)
Association of Czech Construction Economists (ARS)
The Danish Association of Construction Economists (DACE)
The Association of Construction Economists in Finland (ACEF)
Union Nationale des Economists de la Construction et Coordonnateurs (UNTEC)
The Society of Chartered Surveyors of Ireland (SCSI)
Nederlandse Vereniging Van Bouwkostendeskundigen (NVBK)
Swiss Professional Association for Construction Economists
Royal Institution of Chartered Surveyors (RICS)
Input has also been received from CEEC members in Hungary and Germany

Working group for the first (2004) edition

Martin Wright (CH)
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Working group for the 2014 edition

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Simone Dumas (CH)
Pascal Asselin (FR)
Tarmo Savolainen (FIN)

Documents consulted in preparation of this code.

Finland

DIN 277 / 2005: Grundflächen und Rauminhalte von Bauwerken im Hochbau, Deutsches Institut für Normung e.V. (Areas and volumes of buildings / Aires et volumes de bâtiment)
DIN 276 / 2008: Kosten im Bauwesen, Deutsches Institut für Normung e.V. (Building costs / Coûts de bâtiment)

DIN 18960 / 2008: Nutzungskosten im Hochbau, Deutsches Institut für Normung e.V. (User costs of buildings / Coûts d'utilisation de bâtiment)

Germany

National Standard Building Elements 3rd edition: isbn 85053 164 1

NEN 2699:2013 (nl) - "Investment and operating costs of property - Terminology and classification") ICS 01.040.91 January 2013
NEN 2580:2007 (nl) - "Areas and volumes of buildings - Terms, definitions and methods of determination"

Ireland

Netherlands

SN 506 502: Swiss Standard: CCE Cost classification by elements, edition 1995, published by: CRB Swiss Research Centre for Rationalisation in Building and Civil Engineering
SN 506 511: Swiss Standard: BCC-BC Building cost classification in building construction, edition 2012, published by: CRB Swiss Research Centre for Rationalisation in Building and Civil Engineering
SN 506 512: Swiss Standard: BCC-CE Building cost classification in civil engineering, edition 2012, published by: CRB Swiss Research Centre for Rationalisation in Building and Civil Engineering
SIA 504 416: Swiss Standard: SIA 416 quantities definitions, edition 2003, published by: SIA Swiss Society of Engineers and Architects.
d0165: Benchmarking in real estate management, edition 2000, published by: SIA Swiss Society of Engineers and Architects and SVIT Swiss Association of real estate agents and administrators

Switzerland

BCIS SFCA: Elemental Standard Form of Cost Analysis - Principles, Instructions, Elementa and Definitions; 4th (NRM) Edition, BCIS/RICS 2012 (Building Cost Information Service of the RICS, www.bcis.co.uk)

SMLCC: Standardized Method of Life Cycle Costing for Construction Procurement (UK supplement to ISO 15686-5), BSI 2008 (British Standards Institute and Building Cost Information Service, www.bcis.co.uk)

United Kingdom

Note: The SFCA (4th Ed) and NRM1 (2nd Ed) share the same data structure and referencing.

CoMP: Code of measuring practice , 6th Edition, RICS 2007 (www.ricsbooks.com)