Price Collection and Guidelines

Technical Meeting on Construction Survey of the ICP 2021 Cycle

21 July 2021, Workshop day 1

Aaron Wright FRICS MCIOB
Construction Consultant

Economic Commission for Latin America and the Caribbean

Agenda

- Pricing Guidelines
- Relevance Indicators
  - Regional Relevance Indicator
- Resource Mix
  - Regional Resource Mix Ratios
- Why Relevance and Resource Mix are important?

UNITED NATIONS
ECLAC

Price Collection and Guidelines (1)

- Prices of construction inputs (materials, equipment rental, and labor should) should reflect the item specifications in the item catalogue.
- Prices should be provided for items that are commonly available and commonly used in the economy.
- Do not price items that are available and precisely match the item description if that involves pricing a **"special" item** that's **not generally available/used** in construction or your country.
- Any deviations from the item specifications for the item priced (if precise specifications are not available), must be clearly noted.
- The basis of the national accounts valuation of expenditures on GDP is the purchasers' prices, which are the amounts paid by the purchasers, excluding any deductible VAT, in order to take delivery of a unit of a good or service at the time and place required by the purchasers.

Price Collection and Guidelines (2)

- **1 Reference Year** - Economies are asked to provide annual and national "average" prices in their national currency with reference year 2021.
  - Annual averages mean prices that are an average over the survey year (mid-year prices are acceptable) and that average different price levels across the economy, and across different types and sizes of projects.
- **2 Geographical location** - Construction prices can vary across economies (particularly large ones) because of factors such as local resources and distribution costs, geographic, seismic, or climatic conditions, and local market conditions.
  - Sometimes these variations can be significant. Respondents should consider the extent of geographical variations when pricing items and make a judgment on what is a realistic national average.

Price Collection and Guidelines (3)

- **3 Contractor Prices** - The prices provided should be those paid by construction contractors to their suppliers.
  - (1) For materials and products, these are typically the prices paid, after discounts, to manufacturers or intermediaries (agents or merchants), including all non-recoverable taxes.
  - (2) For equipment, prices should be the rental charges paid to hire companies or internal hire rates.
  - (3) For labor, the cost to the contractor of employing workers should, in addition to pre-tax wages to the worker, include any additional costs to the employer for accident / health insurance, pensions, etc. Labor rates should also include any 'off the book' or 'envelope' payments if they are typically made to construction workers in your economy.

Price Collection and Guidelines (4)

- **3 Contractor Prices continued….**
  - (4) For labor, please indicate in the Notes and comments column typical employment conditions for different types of workers, for example ‘permanently employed’ or ‘daily paid’.
  - (5) To help us ensure comparability with rates from other economies, NIAs should confirm if the above rates are gross, i.e. the cost of labor to the contractor as described above, or net, i.e. the rates paid to workers after deduction of taxes and/or other dues. If economies have reported net rates, please indicate the overall percentage adjustment for gross labor costs against net labor rates so the calculation can be made.

UNITED NATIONS
ECLAC

Price Collection and Guidelines (5)

- **4 Site context** - Construction prices can vary, depending on detailed site conditions. For example, constrained city centre sites, greenfield sites adjacent to urban areas, and remote sites that are difficult to access. When pricing items, respondents should assume reasonable site contexts with good access.
- **5 Size of projects** - The size of projects can influence the cost of resources, particularly materials and equipment. For example, large quantities and long hire periods can reduce unit costs and vice versa. Prices should be provided for medium-sized projects, i.e. projects that are not unusually small or unusually large.

Price Collection and Guidelines (6)

- **6 Pricing alternative materials -** Materials included in the construction and civil engineering survey are selected on the basis of their common use across economies. However, listed materials are not always available or used in all economies, and in some cases equivalent materials must be selected and priced.
  - When equivalent materials are being priced, economies are required to include supplementary text which provides clarity regarding what they have priced and the fundamental difference to the specification. This allows the ICP construction expert to assess the equivalent material for comparability and, should it be a recurring theme for multiple countries, potentially incorporate it in future surveys when making refinement to item specifications.

UNITED NATIONS
ECLAC

Price Collection and Guidelines (7)

- **6 Pricing alternative materials continued…**
  - For example, when economies do not have clay and use alternative materials for bricks, prices for the alternative bricks should be provided together with the alternative specification confirming what they are made of. In the event economies do not use bricks but instead use concrete blocks, prices for concrete blocks should not be provided for bricks because they aren't considered an equivalent to bricks and are therefore incomparable. In this case, the brick item would not be priced.
  - If a country is in doubt, they should price the item but it is essential they provide information which explains the difference so the ICP construction expert can make a decision based on the specifics.

Example of Pricing Survey Form

Respondent Information		
Name	ABC Construction Supply	
Address	ABC Avenue	
Contact Number	+63812345678	
Email address	abc@gmail.com	
Type of Respondent	Others	*If Others is selected, please specify*
Item Specifications	**Item Description**	**Observed Data**
Item Code	**1501200-1-01**	
Item Name	**Aggregate, for concrete**	
Number of units	1	1
Unit of measurement	Cubic meter (m3)	Cubic meter (m3)
Price for	Minimum order 5m3 or 10,000kg (bulk bag = 1m3 = 1,920kg)	5 m3
Type	Aggregate for concrete	Aggregate for concrete
Material	Clean, hard, strong crushed stone or gravel	Clean, hard, strong crushed stone or gravel
Quality	Free of impurities and fine materials	Free of impurities and fine materials
Size	9.5 mm - 37.5 mm (size of particles)	20 mm
Packaging	Delivered in bulk bag or by tipper truck	Delivered by tipper truck
Notes	Specify the average size of particles	
Price Information		
Unit price	*Please report in local currency unit (LCU).*	1500
Reference month	*Please indicate the reference month (June or July) for 2021. If the reference month is different from prescribed, that month may be noted in "Comments".*	Jul
Observed date	*Please indicate the date in "mm-dd-yyyy" format when the price was collected.*	07-31-2021
Source	*Sources of information are ICP Specialized Survey for Construction, existing NSO's survey (Construction survey, Building Materials survey, etc.) and Others*	Existing NSO's Survey
Source (Others)	*If Others is selected, please specify*	
Comments		The price for 5 m3 of aggregate is 7,500 LCU, hence, price was divided by 5 to get the unit price.

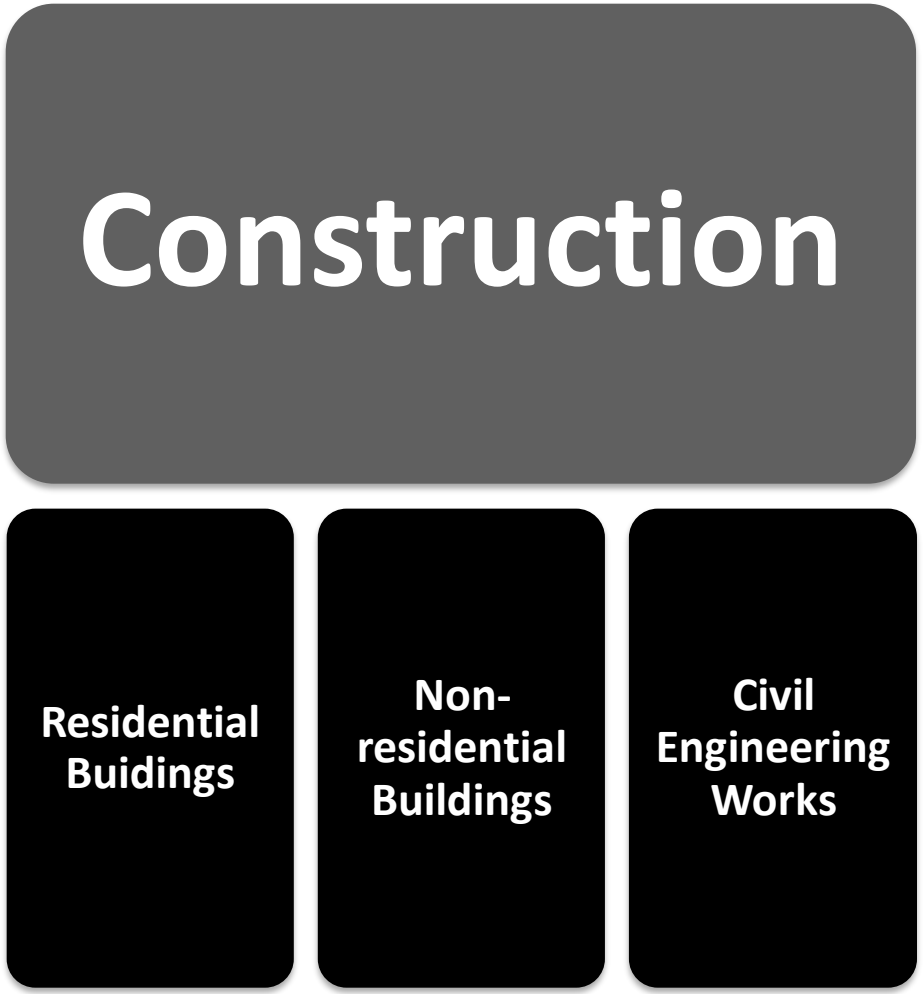
UNITED NATIONS

ECLAC

Relevance Indicators (1)

Construction has three Basic Headings (BHs)

1. Residential Buildings
2. Non-residential Buildings
3. Civil Engineering Works



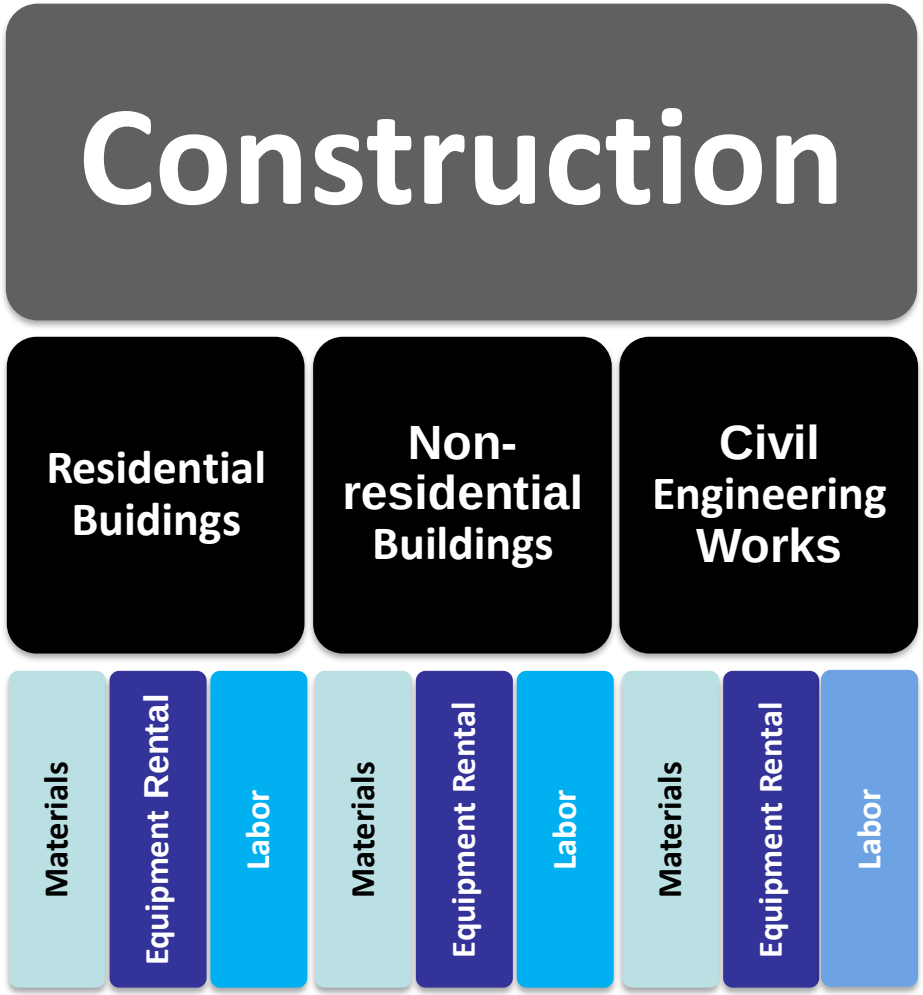
UNITED NATIONS
ECLAC

Relevance Indicators (2)

51 construction input items are grouped into three subheadings:

1. Materials (34nr);
2. Equipment Rental (10nr);
3. Labor (7nr)

These subheadings are allocated under three construction BHs (colored in black) and therefore feature in nine instances (colored in different shades of blue).

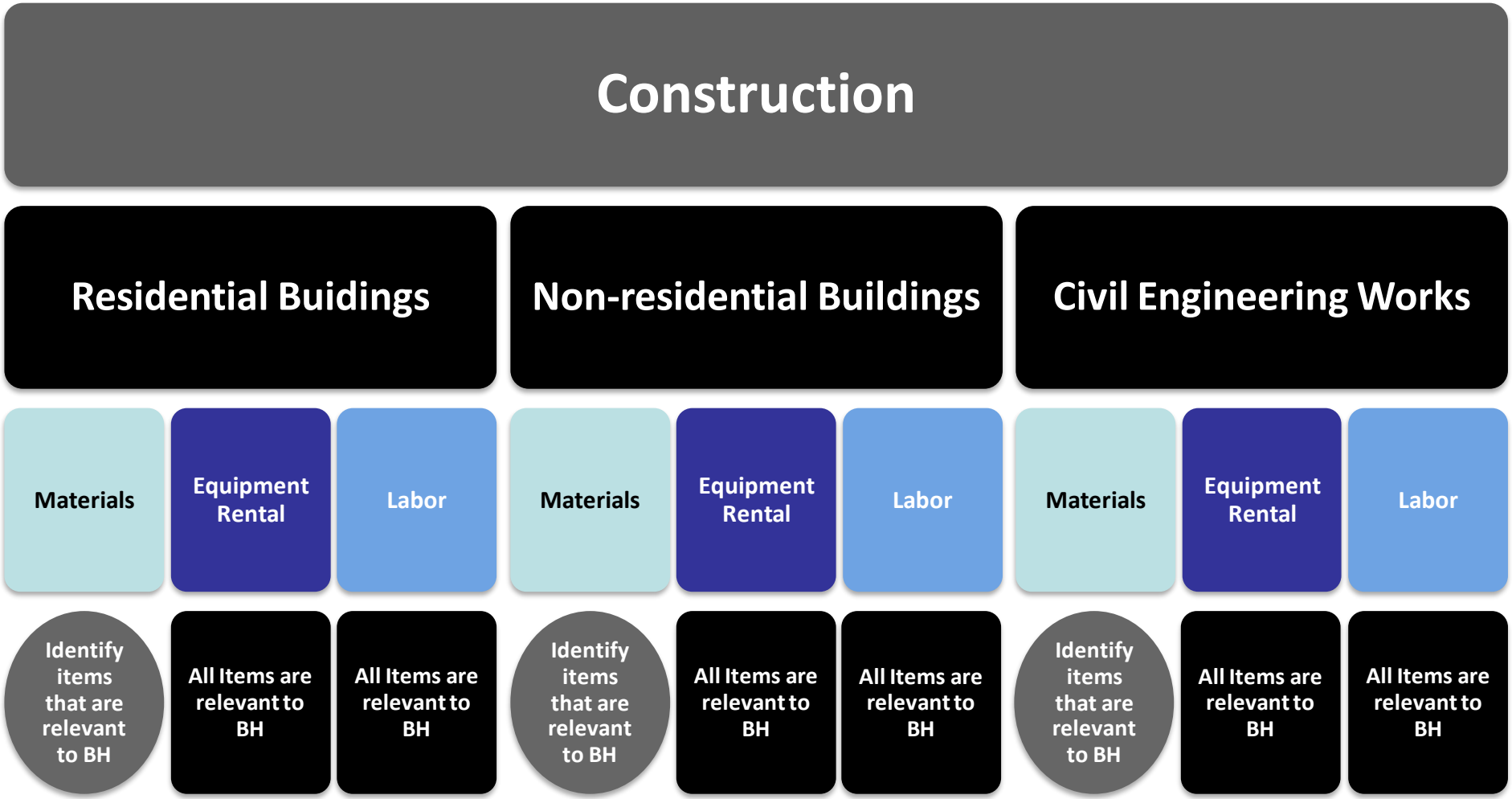


Relevance Indicators (3)

- Items included in the “Equipment Rental” and “Labor” are included (i.e. are relevant) in all three basic headings.
- NOT all items under “Materials” would be relevant for all three BHs, hence countries are required to consult a national construction expert and identify whether a material is commonly used — that is, whether the material in question is relevant for each BH.

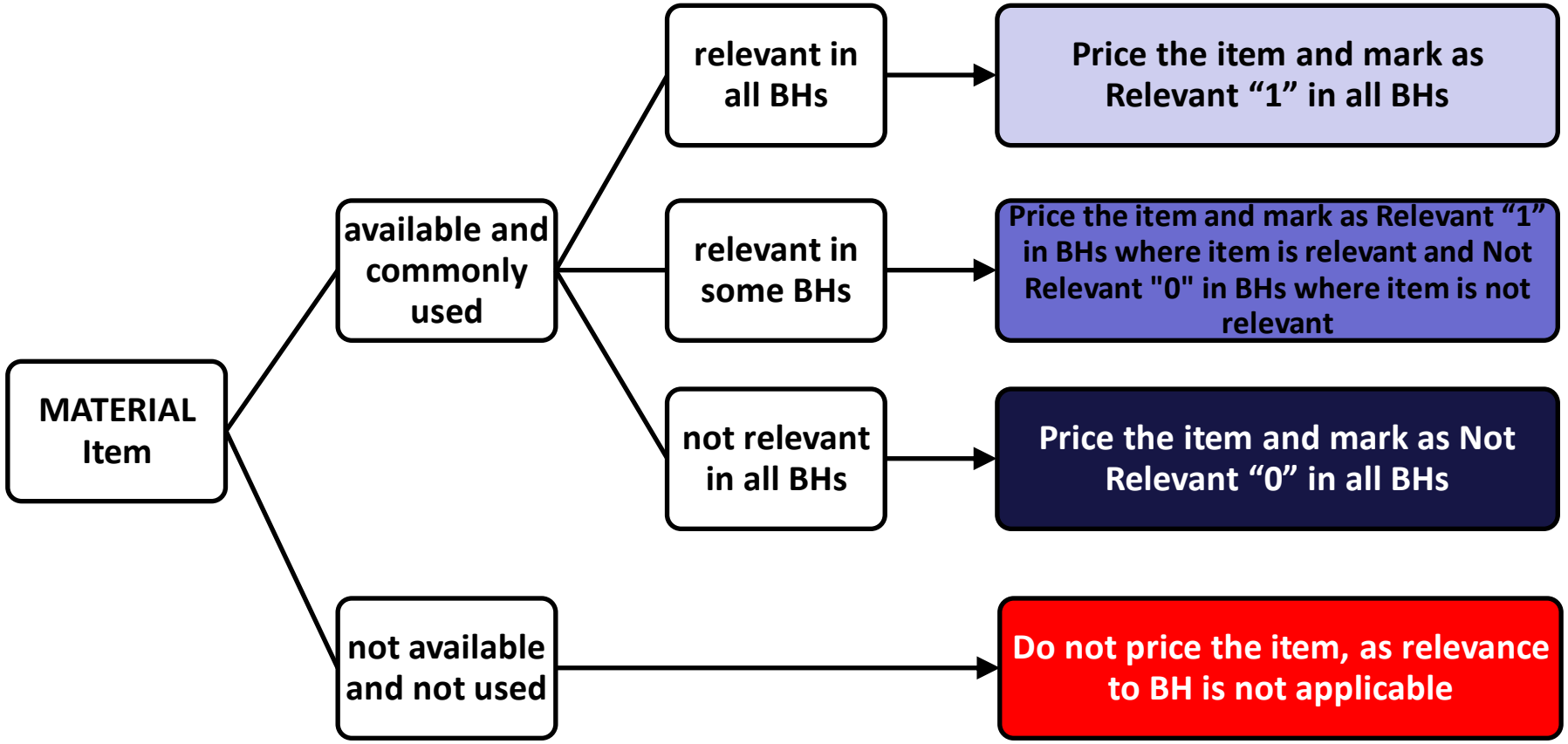
UNITED NATIONS
ECLAC

Relevance Indicators (4)



Relevance Indicators (5)

- The following points should be carefully considered when classifying material inputs as relevant or not relevant for each basic heading.



Regional Relevance Indicators ICP 2017 (1)

Item Code	Item Name	Use in		
		Residential Buildings	Non-Residential Buildings	Civil Engineering Works
TOTAL		28	32	19
1501200101	Aggregate, for concrete	1	1	1
1501200102	Sand, for concrete and mortar	1	1	1
1501200103	Softwood, for carpentry	1	1	1
1501200104	Softwood, for joinery	1	0	0
1501200105	Exterior plywood	1	1	0
1501200106	Interior plywood	1	1	0
1501200107	Chipboard sheet	1	1	0
1501200108	Petrol (gasoline)	1	1	1
1501200109	Diesel fuel	1	1	1
1501200110	Oil paint	1	1	0
1501200111	Emulsion paint	1	1	0
1501200112	Ordinary Portland cement	1	1	1
1501200113	Ready mix concrete	1	1	1
1501200114	Precast concrete slabs	0	1	1
1501200115	Common bricks	1	0	0
1501200116	Facing bricks	1	0	0
1501200117	Concrete blocks, hollow	1	1	1
1501200118	Concrete blocks, solid	0	1	1
1501200119	Clay roof tiles	1	0	0
1501200120	Concrete roof tiles	1	1	0

PVC = polyvinyl chloride; 0 = not relevant; 1 = relevant

UNITED NATIONS

ECLAC

Regional Relevance Indicators ICP 2017 (2)

Item Code	Item Name	Use in		
		Residential Buildings	Non-Residential Buildings	Civil Engineering Works
TOTAL		28	32	19
1501200121	Float (sheet) glass	1	1	0
1501200122	Double glazing units	0	1	0
1501200123	Ceramic wall tiles	1	1	0
1501200124	Plasterboard	1	1	0
1501200125	Hand wash basin	1	1	0
1501200126	High yield steel reinforcement	1	1	1
1501200127	Mild steel reinforcement	1	1	1
1501200128	Structural steel sections	1	1	1
1501200129	Sheet metal roofing	1	1	1
1501200130	Metal storage tank	0	1	0
1501200131	Cast iron drain pipe	0	1	1
1501200132	Copper pipe	1	1	1
1501200133	Electric pump	0	1	1
1501200134	Electric exhaust fan	0	1	1
1501200135	Air-conditioning equipment	0	1	0
1501200136	Stand-by generator	0	0	0
1501200137	Solar panel	0	0	0
1501200138	Electricity	1	1	1

0 = not relevant; 1 = relevant

UNITED NATIONS

ECLAC

Resource Mix (1)

- **Resource mix** is the cost of materials, equipment, and labor expressed as a percentage (%) share of the total expenditure value of each Basic Heading (Residential, Non-Residential, and Civil Engineering).
  - The % shares in different clusters of economies are dependent on the skills and technology available in the economies and on other factors, and average values can vary from economy to economy, within economies, and across types of work.
  - There can be trade-offs between the skill levels and the price of labor (highly skilled labor is usually expensive, but the quantity of workers required is relatively low, and vice-versa), but that is not always the case.

Resource Mix (2)

- In most economies and in most types of work (although not necessarily in civil engineering works), the typical proportion of construction value are as follows:
  - materials (50–75%)
  - equipment rental (5–20%); and
  - labor (20–40%)
- In civil engineering works, the relative significance of labor and equipment can be reversed, and materials may not be the most significant component.

Resource Mix (3)

- The value of construction work in each basic heading varies from economy to economy and from year to year.
  - In larger, more developed economies, there may be long-term regular patterns in construction investment.
  - In smaller and less developed economies, the mix can vary substantially from year to year.
  - Of the three basic headings, civil engineering works tends to be the most variable, particularly in smaller or less developed economies.

Resource Mix (4)

- Information on resource mixes is collected primarily during the price survey. In cases where the national construction experts are not able to provide this information or there is considerable doubt about the reliability of this information, default values that have been estimated on the basis of gross national income (GNI) per capita (indicative of the level of development) of the economies, and relative construction labor costs, can be used.

UNITED NATIONS
ECLAC

Initial Estimate Resource Mixes, ICP 2011

Income group	Materials	Equipment	Labor
	Residential building		
Low-income economies	62.5	15.0	22.5
Middle-income economies	60.0	12.5	27.5
High-income economies	57.5	10.0	32.5
	Nonresidential building		
Low-income economies	62.5	17.5	20.0
Middle-income economies	60.0	15.0	25.0
High-income economies	57.5	12.5	30.0
	Civil engineering work		
Low-income economies	50.0	35.0	15.0
Middle-income economies	50.0	28.8	21.3
High-income economies	50.0	25.0	25.0

Source: ICP, http://icp.worldbank.org/.

Based on 2010 gross national income (GNI) per capita and calculated using the World Bank Atlas

method, 215 economies have been divided into three income groups:

- Low-income, US$1,005 or less
- Middle-income, US$1,006–12,275
- High-income, US$12,276 or more.

UNITED NATIONS

ECLAC

Why Relevance Indicators and Resource Mixes are important? (1)

- Relevance indicators and Resource mixes are used in computing Purchasing Power Parities (PPPs) for Construction
- Using the CPD method, the PPPs for residential, non-residential, and civil engineering works are calculated, taking into account the relevance indicators and resource mixes (weights) according to materials, equipment rental, and labor.

UNITED NATIONS
ECLAC

Why Relevance Indicators and Resource Mixes are important? (2)

- **Standard regional approach for estimating construction PPPs:**
  - (1) Prices collected for the items in the subheadings (materials, equipment rental, and labor) are assigned to the three construction basic headings (residential buildings, non-residential buildings, and civil engineering works) using relevance indicators. ***Only those prices that are relevant to the basic heading will be included in calculating BH PPPs***.
  - (2) First PPPs for the subheading are calculated using the CPD method, resulting in ***nine sets of subheading PPPs*** *(materials-residential, rental –residential, labor-residential, and so on for non-residential, and civil engineering subheadings)*.

UNITED NATIONS
ECLAC

Why Relevance Indicators and Resource Mixes are important? (3)

- **Standard regional approach for estimating construction PPPs continued…..**
  - (3) The subheading PPPs are aggregated using resource mix ratios as weights, resulting in **three basic headings PPPs**—residential, non-residential, and civil engineering.
  - (4) PPPs for the three basic headings are aggregated using national accounts expenditure data as weights, resulting in **PPPs for the Construction group** and these PPS are published in the ICP report.

UNITED NATIONS
ECLAC

UNITED NATIONS

ECLAC