



LAPORAN KUALITAS KONSTRUKSI v.2.4

1. Latar Belakang dan Tujuan

UN Habitat sebagai badan UN yang memfokuskan programnya pada pembangunan perumahan/pemukiman membantu BRR melaksanakan proses monitoring dan evaluasi terhadap proyek-proyek pembangunan perumahan/pemukiman yang telah dilaksanakan oleh berbagai organisasi atau lembaga donor dalam upaya mempercepat pencapaian target pembangunan perumahan/pemukiman bagi korban bencana alam gempa bumi dan gelombang Tsunami 26 Desember 2006 di Nanggroe Aceh Darussalam.

Program monitoring dan evaluasi ini di dukung pelaksanaannya oleh Departemen Pemukiman dan Prasarana Wilayah Dinas Pemukiman dan Perumahan Nanggroe Aceh Darussalam sebagai Team Penasehat Ahli dengan melibatkan Fakultas Teknik Universitas Syiah Kuala sebagai Team Independen dalam melakukan monitoring dan evaluasi.

Tujuan dari pada monitoring dan evaluasi ini adalah melakukan monitoring pada pekerjaan-pekerjaan pembangunan perumahan di wilayah yang terkena bencana gempa bumi dan gelombang Tsunami untuk mengetahui progress pekerjaan yang sedang berlangsung, mempelajari tingkat partisipasi masyarakat dalam pelaksanaan program pekerjaan pembangunan perumahan tersebut dan mengevaluasi kualitas pembangunan rumah dan infrastruktur yang telah di bangun sebagai upaya penyediaan wilayah dan tempat tinggal yang layak bagi korban bencana alam gempa bumi dan Tsunami.

Sebagai mana disebutkan di atas, laporan ini lebih menitikberatkan pada kualitas konstruksi dari hasil yang di dapat di lapangan/temuan lapangan oleh team survey dari Fakultas Teknik Jurusan Teknik Sipil dan Arsitektur Universitas Syiah Kuala.

CONSTRUCTION QUALITY REPORT V.2.4

1. Background and objective

UN Habitat as UN agency focusing its program on housing/settlement development assists BRR to perform monitoring and evaluation process against housing/settlement development project that has been implemented by various organization or donor institution in accelerating the target achievement effort of housing/settlement development for earthquake and tsunami natural disaster victim on 26 December 2006 in Nanggroe Aceh Darussalam.

This monitoring and evaluation program is supported by department of regional settlement and infrastructure, settlement and housing agency for Nanggroe Aceh Darussalam as expert advisory team involving Engineering faculty of Syiah Kuala University as independent team in performing monitoring and evaluation.

The aim of this monitoring and evaluation is to accomplish monitoring on housing development works in tsunami and earthquake disaster affected areas, to know work progress which is going on, to learn community participation level in conducting housing development work program and evaluate house development and infrastructure built as regional providing effort and eligible house living for earthquake and tsunami natural disaster.

As mentioned above, this report more focuses on construction quality than result obtained in field/field finding by survey team from civil engineering faculty and architecture of Syiah Kuala University.



2. Sistem Penilaian

Dalam melakukan penilaian, masing-masing mempunyai indikator yang menjadi acuan dari penilaian itu sendiri. Indikator-indikator ini sendiri terbagi dalam *indikator kritis* dan *indikator tergantung kondisi*. Indikator kritis terbagi lagi ke dalam *indikator yang terpengaruh zona gempa* dan *indikator yang tidak terpengaruh zona gempa*. Sedangkan indikator tergantung kondisi adalah indikator penunjang indikator kritis dan tidak termasuk dalam penilaian.

Dari *indikator kritis yang terpengaruh zona gempa*, di buat perumpamaan yang menghasilkan angka perbandingan antar zona adalah 0,25. Angka perbandingan ini hanya digunakan untuk *indikator kritis yang terpengaruh zona gempa*.

Sistem penilaian ini dilakukan berdasarkan ***Building Code of the Province of Nanggroe Aceh Darussalam, Structure Requirements, Zone Quake 5, Dwelling Houses Structure (Non Engineering Building Structure) dan Standar Nasional Indonesia (SNI)***.

a. Pondasi

Indikator yang digunakan dalam menilai pondasi adalah:

Indikator kritis	Indikator tergantung kondisi
Material pondasi	Jenis tanah
Lebar dasar pondasi	Jenis pondasi
Material sloof	Klas kayu struktural
Dimensi sloof	Tipe besi beton
Komposisi campuran beton	Jarak antar pondasi (bila pondasi setempat)
Diameter tulangan struktural	Zona gempa
Jarak antar begel	

2. Evaluation System

In performing evaluation, each has indicator that becomes reference of the evaluation itself. This indicator itself is divided into *critical indicator* and *conditional indicator*. The critical indicator is divided again into indicator which is influenced by earthquake zone and indicator which is not influenced by earthquake zone. Whereas depended on condition indicator is support indicator, critical indicator is not included in evaluation.

From *the critical indicator influenced by earthquake zone* is supposed yielding comparison among zone number is 0,25. This comparison number is only used for *critical influencing earthquake zone indicator*.

This evaluation system is perform based on ***Building Code of the Province of Nanggroe Aceh Darussalam, Structure Requirements, Zone Quake 5, Dwelling Houses Structure (Non Engineering Building Structure) dan Standar Nasional Indonesia (SNI)***.

a. Foundation

Indicator used in evaluating foundation is:

Critical Indicators	Conditional Indicators
Foundation Material	Soil type
Foundation base width	Type of foundation
Sloof material	Class of structural wood
Sloof dimensi	Type of reinforcement
Concrete Composition	Distance between foundation
Diameter of structural reinforcement	Quake zone
Begel /ring distance	



b. Struktur

Indikator yang digunakan dalam menilai struktur adalah :

Indikator kritis	Indikator tergantung kondisi
Material sloof	Tipe rumah
Dimensi sloof	Jenis pondasi
Jenis kolom	Klas kayu struktural
Material kolom	Tipe besi beton
Material ring balk	Penggunaan pasir
Luasan dinding antar kolom	Balok lantai (jika ada)
Diameter tulangan struktural	Zona gempa
Diameter tulangan non-struktural	
Jarak antar begel	
Komposisi campuran beton	
Sumber air untuk konstruksi	
Semen yang digunakan	
Tipe aggregate	

c. Pemilihan Material

Indikator yang digunakan dalam meniali pemilihan material adalah :

Indikator kritis	Indikator tergantung kondisi
Tipe semen	Material pintu utama
Tipe aggregate	Material pintu kamar mandi
Klas kayu struktural	Material jendela
Klas kayu non-struktural	Penggunaan pasir
Diameter tulangan struktural	Jenis besi beton
Diameter tulangan non-struktural	Zona gempa
Sumber air untuk konstruksi	
Material dinding	
Material lantai	
Material struktur atap	
Material penutup atap	
Material kolom	
Material ring balk	
Material sloof	

b. Structure

Indicator used in evaluating structure is:

Critical Indicators	Conditionial Indicators
Sloof material	Type of house
Sloof dimensi	Type of foundation
Column type	Class of structural wood
Column material	Type of reinforcement
Ring beam material	Sand utilizing
Wall in space between columns	Beam over door or window
Diameter of structural reinforcement	Quake zone
Diameter of non-structural reinforcement	
Begel /ring distance	
Concrete Composition	
Water supply for construction	
Cement type	
Type of aggregate	

c. Material Choice

Indicator used in evaluating material choice is:

Critical Indicators	Conditionial Indicators
Cement type	Main door material
Type of aggregate	Bathroom door material
Class of structural wood	Window material
Class of non-structural wood	Sand utilizing
Diameter of structural reinforcement	Type of reinforcement
Diameter of non-structural reinforcement	Quake zone
Water supply for construction	
Wall material	
Floor material	
Roof structure material	
Roof covering material	
Column material	
Ring beam material	
Sloof material	



d. Ikatan/Pengangkeran

Indikator yang digunakan untuk menilai ikatan/pengangkeran adalah :

Indikator kritis	Indikator tergantung kondisi
Apakah struktur utama bangunan di ikat ke struktur atap?	Zona gempa
Sistem ikatan struktur utama bangunan ke struktur atap	
Ikatan angin	
Pintu di dukung oleh angker	
Jendela di dukung oleh angker	

e. Kualitas Finishing

Kualitas finishing tidak mempunyai indikator tergantung kondisi, oleh karena itu indikator yang digunakan untuk menilai kualitas finishing adalah :

Indikator kritis	Indikator tergantung kondisi
Material lantai	
Komposisi plester	
Tipe semen	

Dalam melakukan analisa, sering terjadi adanya indikator kritis yang kosong atau tidak dapat diamati. Hal ini sering terjadi jika progres rumah yang ditinjau sudah lebih dari 80%. Jika terjadi hal seperti ini dalam suatu tinjauan, maka jika indikator tinjauan tersebut kurang dari 50% kosong atau tidak dapat diamati, tinjauan tersebut akan kosong. Hal ini digunakan agar jangan sampai salah dalam menganalisa tinjauan tersebut.

Formula yang digunakan dalam menganalisa hasil masing-masing tinjauan dapat dilihat pada tabel dibawah ini.

d. Bracing/Anchoring

This indicator is used to evaluate bracing/anchorage is:

Critical Indicators	Conditionnal Indicators
Are reinforced column tied into the roof structure (permanent)	Quake zone
Bracing system	
Wind bracing	
Door provided with anchor	
Window provided with anchor	

e. Finishing Quality

This finishing quality has no conditional indicator, therefore indicator which is using to evaluate finishing quality is:

Critical Indicators	Conditionnal Indicators
Floor material	
Plester cement composition	
Cement type	

In performing analyse, often occur the blank critical indicator or can not be observed. This is often happen if house progress observed has more than 80%. If this case happens in an observation, thus if observation indication less than 50% blank or can not be observed. This is used in order may not mistake in analyzing the observation.

The formula used in analyzing each observation result can be seen on the table in the following.



Tinjauan	Formula		Keterangan
Pondasi	$=if(A>4, average(B,C,D,E), F(if(I=4, (average(G,H)+0.25), if(I=5, (average(G,H)), if(I=6, (average(G,H)-0.25))))), "")$	A B C D E F G H I	indikator kritis yang dijawab material sloof dimensi sloof komposisi campuran beton diameter tulangan struktural jarak antar begel material pondasi lebar dasar pondasi zona gempa
Struktur	$=if(A>7, ((average(B,C,D,E,F,G,H,I,J,K,L,M, (if(N=4, (average(O)+0.25), if(N=5, (average(O))), if(N=6, (average(O)-0.25))))))), "")$	A B C D E F G H I J K L M N O	indikator kritis yang dijawab material sloof dimensi sloof jenis kolom material kolom material ring balk diameter tulangan struktural diameter tulangan non-struktural jarak antar begel komposisi campuran beton sumber air untuk konstruksi semen yang digunakan tipe aggregate zona gempa luasan dinding antar kolom
Pemilihan Material	$=if(A>7, average(B,C,D,E,F,G,H,I,J,K,L,M,N,O), "")$	A B C D E F G H I J K L M N O	indikator kritis yang dijawab semen yang digunakan tipe aggregate klas kayu struktural kals kayu non-struktural diameter tulangan struktural diameter tulangan non-struktural sumber air untuk konstruksi material dinding material lantai material struktur atap material penutup atap material kolom material ring balk material sloof
Ikatan/Pengangkeran	$=if(A>2, average(B,C,D,E), (if(F=4, (average(G)+0.25), if(F=5, (average(G)), if(F=6, (average(G)-0.25))))), "")$	A B C D E F G	indikator kritis yang dijawab sistem ikatan struktur utama bangunan ke struktur atap ikatan angin pintu di dukung oleh angker jendela di dukung oleh angker zona gempa apakah struktur utama bangunan di ikat ke struktur atap?
Kualitas Finishing	$=if(A>1, (average(B,C,D)), "")$	A B C D	indikator kritis yang dijawab material lantai komposisi plester tipe semen

Observation	Formula		Remark
Foundation	$=if(A>4, average(B,C,D,E), F(if(I=4, (average(G,H)+0.25), if(I=5, (average(G,H)), if(I=6, (average(G,H)-0.25))))), "")$	A B C D E F G H I	critical indicators was answered sloof material sloof dimension concrete composition diameter of structural reinforcement bebel /ring distance foundation Material foundation base width quake zone
Structure	$=if(A>7, ((average(B,C,D,E,F,G,H,I,J,K,L,M, (if(N=4, (average(O)+0.25), if(N=5, (average(O))), if(N=6, (average(O)-0.25))))))), "")$	A B C D E F G H I J K L M N O	critical indicators was answered sloof material sloof dimension column type column material ring beam material diameter of structural reinforcement diameter of non-structural reinforcement bebel /ring distance concrete composition water supply for construction cement type type of aggregate quake zone wall in space between columns
Material Choice	$=if(A>7, average(B,C,D,E,F,G,H,I,J,K,L,M,N,O), "")$	A B C D E F G H I J K L M N O	critical indicators was answered cement type type of aggregate class of structural wood class of non-structural wood diameter of structural reinforcement diameter of non-structural reinforcement water supply for construction wall material floor material roof structure material roof covering material column material ring beam material sloof material
Bracing / Anchoring	$=if(A>2, average(B,C,D,E), (if(F=4, (average(G)+0.25), if(F=5, (average(G)), if(F=6, (average(G)-0.25))))), "")$	A B C D E F G	critical indicators was answered bracing system wind bracing door provided with anchor window provided with anchor quake zone are reinforced column tied into the roof structure (permanent)
Finishing Quality	$=if(A>1, (average(B,C,D)), "")$	A B C D	critical indicators was answered floor material plester cement composition cement type



Setelah hasil dari analisa di atas di dapat, hasil tersebut di bawa ke tabel berikutnya yang merupakan tabel total dari kemanan konstruksi.

Hasil dari analisa di atas bisa terjadi kekosongan yang disebabkan oleh kurangnya indikatoor peninjau dari masing-masing tinjauan. Untuk mengisi/menganalisa hasil dari masing-masing tinjauan yang kosong, maka digunakan cara menghilangkan *Cluster* yang terdapat kekosongan tinjauan. Setelah dipisahkan maka didapati *Cluster* dengan tinjauan lengkap. Dari *Cluster* yang tinjauannya lengkap, dicari sebaran normal dari masing-masing tinjauan untuk didapat angka perbedaan yang digunakan untuk perkalian tinjauan yang mengalami kekosongan. Dalam hal ini lebih diutamakan tinjauan terhadap Pondasi dan Struktur, dimana tinjauan terhadap Pondasi dan Struktur terlalu banyak mengalami kekosongan.

Setelah hasil dari sebaran linear di dapat, maka untuk menganalisa *Total Kualitas Konstruksi* digunakan formula :

=AVERAGE(IF(Pondasi="",IF(AVERAGE (Ikatan/Pengangkeran, Kualitas Finishing)>2.8, AVERAGE(Ikatan/Pengankeran,Kualitas Finishing),AVERAGE(Ikatan/Pengankeran, Kualitas Finishing)*0.9), Pondasi), IF (Struktur="",AVERAGE (Ikatan/Pengankeran, Kualitas Finishing)-0.3,Struktur), Pemilihan Material,Ikatan/Pengankeran,Kualitas Finishing)

After the result from the analysis above obtained, the result brought to the next table which is atotal table of construction security.

From the analyse above may happen emptiness causing by less observation indicator for each observation. To fill/analyse result of each the blank observation, thus may be used the method of deleting *Cluster* obtaining *cluster* with complete observation. From the *cluster* with complete observation, searched normal spreading from each observation to be obtained difference number used for observation multiplying that is blank In this case, more prioritized the observation against foundation and structure, where observation against foundation and structure is many blanks.

From the result of linear spread obtain, thus to analyse *Total of construction quality* used formula:

=AVERAGE(IF(Foundation="",IF(AVERAGE (Bracing/Anchoring, Finishing Quality)>2.8, AVERAGE(Bracing/Anchoring, Finishing Quality),AVERAGE(Bracing/Anchoring, Finishing Quality)*0.9), Foundation), IF (Structure="",AVERAGE (Bracing/Anchoring, Finishing Quality)-0.3,Struktur), Material Choice, Bracing/Anchoring, Finishing Quality)



3. Penutup

Analisa ini mungkin terdapat beberapa kekurangan, dan terus dilakukan percobaan analisa untuk mendapatkan hasil yang lebih baik dan sesuai dengan yang diharapkan dan tidak tertutup kemungkinan bahwa dari perkembangannya selanjutnya didapati hasil yang lebih baik lagi.

Hasil dari analisa kualitas konstruksi dapat dilihat pada lampiran.

3. Closing

This analyse possibly obtained several weaknesses and continually performed analyse to obtain a better result and suits with the expected and not closed the possibility that from its further development obtained a better again.

The result of construction quality analyse may be seen in the attachment.

UNSYIAH - UN-Habitat Monitoring of 315 houses of about 33 organisations in 63 locations in Aceh Besar, Aceh Barat, Banda Aceh and Pidie.

May 06 - DRAFT SUMMARY RESULTS v.2.4

Clus-ter	Organisation	District	Subdistrict	Village	Construction Safety					Con-struction Quality	Positive Replies (certainty of evaluation)	Satisfaction with Organisation (Did good work?)	Expected Lifetime of the House	Source of Skilled / Unskilled Labour	
					Foundation	Structure	Material Choice	Bracing / Anchoring	Finishing Quality						
I. Full Brick Houses or Houses with Frame and Durable Infill															
1	PID_009	EMERGENCY ARCHITECT FRANCE	PIDIE	KOTA SIGLI	KUALA PIDIE		3.13	3.00	3.08		3.07	3	d. agree	e. >20 y.o.	f. national contractor
2	PID_013	EMERGENCY ARCHITECT FRANCE	PIDIE	KOTA SIGLI	KRAMAT LUAR		3.13	3.00	3.08		3.07	3	b. disagree	e. >20 y.o.	h. national contractor with non local labour
3	PID_019	ATLAS LOGISTIQUE	PIDIE	SIMPANG TIGA (PIDIE)	KUPULA	3.38	2.90	3.27	3.05	2.67	3.05	5	d. agree	d. 11-20 y.o.	c. self service
4	BNA_003	CARE INTERNATIONAL	BANDA ACEH	KUTA ALAM	LAMBARO SKEP	2.85		2.80	3.05	3.50	3.04	4	d. agree	e. >20 y.o.	d. local labour
7	PID_020	BRR	PIDIE	SIMPANG TIGA (PIDIE)	PEUKAN TUHA		2.83	2.77	3.05	3.33	3.03	4	b. disagree	e. >20 y.o.	e. local contractor
8	ABA_017	ISLAMIC RELIEF	ACEH BARAT	SAMA TIGA	SUAK PANDAN	2.83	2.50	2.85	3.00	3.67	2.97	5	c. doubt	e. >20 y.o.	d. local labour
5	BNA_006	BUDHA TBU CHI	BANDA ACEH	LUENG BATA	PANTERIEK				3.05	3.00	2.95	2	d. agree	e. >20 y.o.	b. not sure
9	PID_011	EMERGENCY ARCHITECT	PIDIE	KOTA SIGLI	PASI PEUKAN BARO		2.70	2.63	3.42	2.67	2.89	4	d. agree	b. 3-5 y.o.	e. local contractor
10	ABA_001	CRS	ACEH BARAT	JOHAN PAHLAWAN	PANGGONG	2.67	2.92	2.92	2.75	3	2.85	5	d. agree	e. >20 y.o.	g. national contractor with local labour
11	ABA_007	WORLD VISION	ACEH BARAT	JOHAN PAHLAWAN	UJONG BAROH	2.83	2.75	2.85	2.80	3.00	2.85	5	d. agree	e. >20 y.o.	g. national contractor with local labour
19	ABA_015	SOS	ACEH BARAT	SAMA TIGA	GAMPONG COT		2.58	2.57	3.00	3.00	2.83	4	d. agree	e. >20 y.o.	f. national contractor
12	ABA_019	WORLD VISION	ACEH BARAT	SAMA TIGA	SUAK TIMAH	2.75	2.62	2.79	3.00	3.00	2.83	5	d. agree	e. >20 y.o.	d. local labour
20	ABA_022	SOS	ACEH BARAT	JOHAN PAHLAWAN	SUAK RAYA		2.45	2.69	3.00	3.00	2.83	4	d. agree	e. >20 y.o.	f. national contractor
13	ABE_007	HURKEY	ACEH BESAR	LHONGA	MEUNASAH MESJID LAMPUUK	2.58	2.69	2.86	3.00	3.00	2.83	5	d. agree	e. >20 y.o.	e. local contractor
14	ABA_021	HABITAT FOR HUMANITY	ACEH BARAT	SAMA TIGA	GAMPONG TEUNGOH	3.00	2.45	2.67	3.00	3.00	2.82	5	d. agree	e. >20 y.o.	f. national contractor
15	BNA_005	BRR	BANDA ACEH	KUTA RAJA	GAMPONG JAWA	2.71	2.77	2.85	3.05	2.67	2.81	5	c. doubt	e. >20 y.o.	g. national contractor with local labour
16	ABE_003	SAMARITAN'S PURSE	ACEH BESAR	BAITUSSALAM	KLIENG COT ARON	3.04	2.87	2.86	2.25	3.00	2.80	5	d. agree	e. >20 y.o.	d. local labour
22	PID_017	UN-HABITAT	PIDIE	PIDIE	RAWA		2.52	2.71	2.85	3.00	2.80	4	d. agree	e. >20 y.o.	b. not sure
18	BNA_008	MDTFANS	BANDA ACEH	MEURAKSA	BLANG OI	2.75	2.73	2.83	3.00	2.67	2.80	5	c. doubt	b. not sure	e. local contractor
21	ABA_011	CRS	ACEH BARAT	MEUREUBO	LANGUNG	2.58	2.67	3.00	3.00	2.67	2.78	5	d. agree	e. >20 y.o.	e. local contractor
23	PID_004	GTZ/KIW	PIDIE	KEMBANG TANJUNG	LANCANG	2.88	2.81	2.96	3.05	2.00	2.74	5	c. doubt	e. >20 y.o.	e. local contractor
24	ABE_013	HABITAT FOR HUMANITY	ACEH BESAR	REUKAN BADA	LAM GEU EU		2.45	2.73	3.00	2.67	2.74	4	c. doubt	e. 11-20 y.o.	g. national contractor with local labour
17	ABA_002	HABITAT FOR HUMANITY	ACEH BARAT	JOHAN PAHLAWAN	KUTA PADANG		2.90	2.79	3.00	2.50	2.73	4	d. agree	e. >20 y.o.	e. local contractor
25	BNA_004	HABITAT FOR HUMANITY	BANDA ACEH	KUTA ALAM	LAMDINGIN	2.38	2.35	2.77	3.05	3.00	2.71	5	d. agree	e. >20 y.o.	c. local labour
26	PID_003	SERASIH INDONESIA	PIDIE	BATEE	PASI BEURANDEH	2.54	2.52	2.46	3.00	3.00	2.70	5	b. disagree	e. >20 y.o.	g. national contractor with local labour
27	ABA_012	HABITAT FOR HUMANITY	ACEH BARAT	MEUREUBO	LANGUNG	2.75	2.67	2.77	3.00	2.33	2.70	5	d. agree	e. >20 y.o.	e. local contractor
28	PID_016	UN-HABITAT	PIDIE	PIDIE	PEUKAN BARO	2.45	2.52	2.69	2.85	3.00	2.70	5	d. agree	e. 6-10 y.o.	d. local labour
29	PID_008	HABITAT FOR HUMANITY	PIDIE	KOTA SIGLI	KRAMAT LUAR	2.71	2.60	2.79	3.05	2.33	2.70	5	a. not relevant	e. >20 y.o.	d. local labour
30	PID_006	HABITAT FOR HUMANITY	PIDIE	KOTA SIGLI	PANTE TEUNGOH	3.15	2.65	2.88	2.45	2.33	2.69	5	d. agree	b. 3-5 y.o.	e. local contractor
32	PID_018	ATLAS LOGISTIQUE	PIDIE	SIMPANG TIGA (PIDIE)	COT JAJA	3.19	2.66	2.75	2.25	2.50	2.67	5	d. agree	e. >20 y.o.	e. local contractor
33	ABA_010	KKSP	ACEH BARAT	MEUREUBO	GUNONG KLENG	2.33	2.54	2.65	2.80	3.00	2.67	5	d. agree	e. >20 y.o.	g. national contractor with local labour
36	ABA_008	KIRG	NAGAN RAYA	KUALA (NAGAN RAYA)	SUAK PUNTOG	2.17	2.42	2.69	3.00	3.00	2.66	5	b. disagree	e. >20 y.o.	d. local labour
38	ABE_001	ISLAMIC RELIEF	ACEH BESAR	BAITUSSALAM	BLANG KRUENG	2.38	2.60	2.68	2.45	3.00	2.62	5	c. doubt	a. 0-2 y.o.	f. national contractor
39	BNA_002	UN-HABITAT	BANDA ACEH	KUTA ALAM	KEURAMAT	2.54	2.19	2.62	3.05	2.67	2.61	5	d. agree	e. >20 y.o.	e. local contractor
31	PID_014	UN-HABITAT	PIDIE	PANTE RAJA	PEURADE		2.69	3.00	2.08	3.00	2.61	4	b. disagree	e. >20 y.o.	e. local contractor
37	ABE_009	SERASIH INDONESIA	ACEH BESAR	MESJID RAYA	LAMNGA		2.53	2.65	2.65	2.75	2.60	4	d. agree	b. 3-5 y.o.	h. national contractor with non local labour
41	BNA_001	WORLD BANK/MDIT-P2KP	BANDA ACEH	MEURAKSA	GAMPONG BARO	2.33	2.42	2.77	3.00	2.33	2.57	5	d. agree	e. >20 y.o.	h. national contractor with non local labour
34	PID_001	SERASIH INDONESIA	PIDIE	BATEE	KULAM			2.64	1.85	3.50	2.55	3	b. disagree	e. >20 y.o.	h. national contractor with non local labour
35	PID_002	SERASIH INDONESIA	PIDIE	BATEE	KULEE			2.64	1.85	3.50	2.55	3	b. disagree	e. >20 y.o.	g. national contractor with local labour
48	ABA_003	WORLD RELIEF	ACEH BARAT	JOHAN PAHLAWAN	SEUNEUBOK		1.85	2.35	3.00		2.55	3	b. disagree	e. >20 y.o.	b. not sure
42	PID_005	FREE DES HOMMES NETHERLANDS	PIDIE	KEMBANG TANJUNG	JEMEURANG	2.54	2.40	2.36	3.05	2.33	2.54	5	b. disagree	e. >20 y.o.	h. national contractor with non local labour
43	ABA_005	BALA KESELAMATAN, SALVATION ARMY	ACEH BARAT	JOHAN PAHLAWAN	SUAK RIBEE	1.92	2.31	2.64	2.80	3.00	2.53	5	d. agree	e. >20 y.o.	f. national contractor
44	ABA_009	HABITAT FOR HUMANITY	ACEH BARAT	MEUREUBO	MEUREUBO	2.17	2.38	2.64	2.40	3.00	2.52	5	d. agree	e. >20 y.o.	b. not sure
45	ABE_004	YAYASAN SOSIAL KREASI	ACEH BESAR	BAITUSSALAM	LAM UJONG	2.71	2.63	2.82	1.56	2.67	2.48	5	d. agree	e. >20 y.o.	h. national contractor with non local labour
46	ABA_014	HABITAT FOR HUMANITY	ACEH BARAT	SAMA TIGA	COT DARAT	3.82	2.31	2.50	3.00	2.67	2.48	5	b. disagree	e. >20 y.o.	d. local labour

UNSYIAH - UN-Habitat Monitoring of 315 houses of about 33 organisations in 63 locations in Aceh Besar, Aceh Barat, Banda Aceh and Pidie.
May 06 - DRAFT SUMMARY RESULTS v.2.4

Clus-ter	Organisation	District	Subdistrict	Village	Construction Safety					Con-struction Quality	Positive Replies (certainty of evaluation)	Satisfaction with Organisation (Did good work?)	Expected Lifetime of the House	Source of Skilled / Unskilled Labour
					Foundation	Structure	Material Choice	Bracing / Anchoring	Finishing Quality					
40 PID_012	EMERGENCY ARCHITECT FRANCE	PIDIE	KOTA SIGLI	PASI RAWA			2.71	3.08	2.00	2.46	3	d. agree	e. >20 y.o.	d. local labour
47 PID_010	HABITAT FOR HUMANITY	PIDIE	KOTA SIGLI	LAMPOIH KRUENG	2.71	2.48	2.38	2.25	2.33	2.43	5	c. doubt	e. >20 y.o.	d. local labour
49 ABA_013	CRS	ACEH BARAT	SAMA TIGA	PUCOK LUENG	1.83	2.33	2.40			2.19	3	c. doubt	e. >20 y.o.	h. national contractor with non local labour
II. Half-Brick or Frame - Soft Infill Houses														
2 PID_007	IOM	PIDIE	KOTA SIGLI	KRAMAT LUAR		2.66	2.38	2.25	2.50	2.39	4	d. agree	a. 0-2 y.o.	d. local labour
5 BNA_009	YBI	BANDA ACEH	MEURAKSA	DEAH BARO	1.93	2.08	2.39	2.80	2.67	2.35	5	b. disagree	b. 3-5 y.o.	b. not sure
3 ABE_005	OXFAM	ACEH BESAR	DARUSSALAM	LAM PEUDAYA		2.23	2.38	2.25	2.67	2.35	4	b. disagree	b. 3-5 y.o.	a. don't know
4 ABA_004	TERRE DE HOMMES GERMANY & KKSP	ACEH BARAT	JOHAN PAHLAWAN	SUAK NIE		2.18	2.58	1.75	3.00	2.33	4	b. disagree	d. 11-20 y.o.	g. national contractor with local labour
7 ABE_022	CARITAS-MAMAMIA CARITAS-MAMAMIA	ACEH BESAR	LHOONG	BAROH KRUENGKALA	2.40	2.13	2.42	2.20	2.33	2.30	5	d. agree	e. >20 y.o.	d. local labour
8 BNA_010	OXFAM	BANDA ACEH	MEURAKSA	DEAH BARO	1.67	2.08	2.25	2.80	2.67	2.29	5	b. disagree	b. 3-5 y.o.	b. not sure
1 BNA_011	IOM	BANDA ACEH	KUTA RAJA	LAMPASEH KOTA		2.77	2.25			2.25	2	b. disagree	a. 0-2 y.o.	f. national contractor
6 ABE_015	IOM	ACEH BESAR	PEUKAN BADA	LAM ASAN			2.33	2.20	2.50	2.24	3	b. disagree	b. 3-5 y.o.	d. local labour
9 ABE_008	OXFAM	ACEH BESAR	BAITUSSALAM	KAJHU	1.54	1.83	2.29	2.25	2.67	2.11	5	c. doubt	e. >20 y.o.	h. national contractor with non local labour
10 ABE_002	PEMERINTAH SULAWESI TENGAH	ACEH BESAR	BAITUSSALAM	CADEK				1.31	2.50	1.78	2	d. agree	b. 3-5 y.o.	h. national contractor with non local labour
III. Timber Houses														
1 ABE_024	NORLINK	ACEH BESAR	MESJID RAYA	DURUNG			2.63	2.25		2.21	2	d. agree	e. >20 y.o.	d. local labour
2 ABE_023	YEU	ACEH BESAR	MESJID RAYA	LAM REH			2.50	2.25		2.18	2	b. disagree	e. >20 y.o.	f. national contractor
3 PID_015	SAVE THE CHILDREN	PIDIE	PANTE RAJA	MESJID PANTE RAJA			2.30	2.31		2.18	2	d. agree	c. 6-10 y.o.	e. local contractor
4 ABA_018	CRS	ACEH BARAT	SAMA TIGA	SUAK SEUMASEH	1.88	2.18	2.42	2.40	2.00	2.17	5	c. doubt	a. 0-2 y.o.	d. local labour
6 ABA_006	SALVATION ARMY	ACEH BARAT	JOHAN PAHLAWAN	SUAK SIGADENG				3.00		2.90	1	d. agree	e. >20 y.o.	g. national contractor with local labour

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May 06 - CONSTRUCTION QUALITY INDICATORS AND SCORING v.2.4

	Indicators		Scoring Value for Each Indicator		
	Critical Indicators	Conditional Indicators	Score	Brick, Concrete, Metal	Half-Brick, Soft-Infill, Timber
Foundation	Foundation Material, Foundation base width, Sloof material, Sloof dimensi, Concrete Composition, Diameter of structural reinforcement, Begel /ring distance	Soil type, Type of foundation, Class of structural wood, Type of reinforcement, Distance between foundation , Quake zone	4	BETTER THAN BUILDING CODE	BUILDING CODE, AND VERY DURABLE
Structure	Sloof material, Sloof dimensi, Column type, Column material, Ring beam material, Wall in space between columns, Diameter of structural reinforcement, Diameter of non-structural reinforcement, Begel /ring distance, Concrete Composition, Water supply for construction, Cement type, Type of aggregate	Type of house, Type of foundation, Class of structural wood, Type of reinforcement, Sand utilizing, Beam over door or window, Quake zone	3	BUILDING CODE TRESHOLD	BUILDING CODE , AND MORE DURABLE
Material Choise	Cement type, Type of aggregate, Class of structural wood, Class of non-structural wood, Diameter of structural reinforcement, Diameter of non-structural reinforcement, Water supply for construction, Wall material, Floor material, Roof structure material, Roof covering material, Column material, Ring beam material, Sloof material	Main door material, Bathroom door material, Window material, Sand utilizing, Type of reinforcement, Quake zone	2	BELOW BUILDING CODE	BUILDING CODE TRESHOLD
Braching/Anchoring	Are reinforced column tied into the roof structure (permanent), Bracing system, Wind bracing, Door provided with anchor, Window provided with anchor	Quake zone	1	CRITICALLY BELOW BUILDING CODE	BELOW BUILDING CODE
Finishing Quality	Floor material, Plester cement composition, Cement type		0	INACCEPTABLE	CRITICALLY BELOW BUILDING CODE
			" "	COULD NOT BE ANALYSED	COULD NOT BE ANALYSED