

Notes on the Rapid Assessment in Schools affected by heavy rain and strong wind in Rubavu District

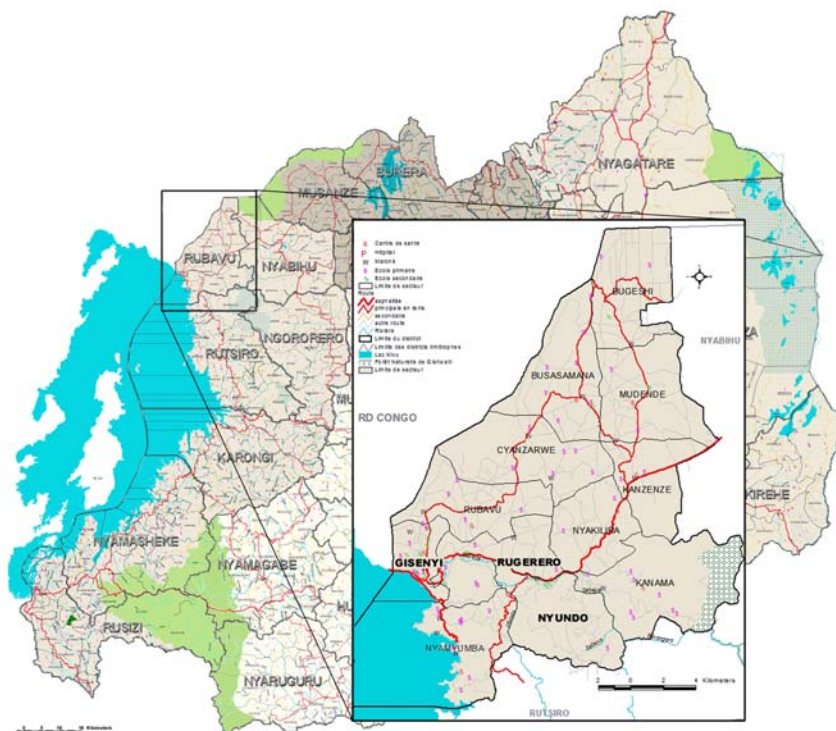
4 October 08

Background

On Sunday 28th of September, heavy rain and strong wind have seriously damaged thousands of houses and many public infrastructures in the Rubavu District.

Figures provided by The Ministry of Internal Security (MINALOC), the Disaster Management Unit (DMU) and Local Authorities indicate that around two thousand houses has collapsed, hundreds of classrooms have lost the roof as well as churches and public facilities.

A quick answer from several International Organization has been organize through the Authorities coordination with several meetings held in MINALOC and a joint rapid assessment in the Rubavu District to streamline the efforts towards a proper reconstruction.



The rapid assessment

The rapid assessment carried out from the 1st up to the 3rd of October 2008 aims at documenting damaged Primary and Secondary Schools in the three sectors of Gisenyi, Rugerero and Nyundo to inform MINALOC and DMU about the actual conditions of Educational Infrastructures and advice about a possible strategy of intervention for rehabilitation or reconstruction.

The visit was accompanied by the Director of the Education Section of the District Mrs. Mediatrice Mwangange (08539113) and two colleagues from UNICEF: Eng. Gedeon Musabyimana WASH Section (08629079) and Mr. Laurent Rusamganwa photographer (08491557).

Following table offers a summary of number of classrooms with damaged roofs and completely destroyed in Primary and Secondary Schools as per list received by Local Authorities:

Primary Schools			
School Name	Main masonry type	Class. with damaged roof	Class. collapsed
Umubano II	Firebrick	1	0
Umubano IV	Firebrick	7	0
Umubano III	Adobe	4	0
Umubano I/A	Firebrick	12	0
Umubano I/B	Firebrick	1	0
Gacuba II/B	Firebrick	8	1
Muhato	Firebrick / CHB	16	0
Kivumu	Adobe/ Firebrick	6	1
Ubumwe	CHB / Adobe	0	2
Nkama	N/A	6	0
Total		61	4

Secondary Schools			
School Name	Main masonry type	Class. with damaged roof	Class. collapsed
ESEGI	N/A	2	0
ETAG	N/A	0	0
TTC	Firebrick	6	1
ESBF	Firebrick / CHB	6	2
CNG	Firebrick / CHB	9	3
Ecole d'Arts	N/A	3	0
Petit Sem	N/A	0	0
GSNDA	N/A	0	0
Total		26	6

N.B. Visited schools during assessment are highlighted in bolt

Main findings and suggestions

In most of visited schools **walling systems** built with Firebricks and Concrete Hollow Blocks (CHB) **are still in good conditions while main observed damages concern only the roof structure and supported Corrugated Iron Sheet (CIS) system** that has been removed by the strong wind.

Several classrooms have collapse probably because of the poor techniques of construction and the insufficient quantity of cement used for the mortar (i.e. ESBF).

Only two visited schools, Kivumu and Ubumwe present classrooms built with Adobe masonry that should be completely rebuilt with a stronger construction technique for a durable solution.

From the above, by reason of existing walls in good conditions and main observed damaged, instead of a temporary solution represented by the simple roof repairing with timber structure and plastic sheeting, **suggested durable solution propose the complete reconstruction of the roof structure with metal square pipes to support good quality metal sheeting as per standard promoted by MINEDUC/UCEFS for Primary Schools construction nation wide.**

Proposed durable solution could also receive the easy future installation of a **rain harvesting system** composed by gutters and water reservoir for those remote areas where piped water supply is not reliable.



Typical UNICEF Child Friendly School roof metal structure with BG-28 metal sheeting and rain harvesting system

Primary Schools

Umubano II



Umubano IV



Umubano III



Umubano I/A and I/B



Gacuba II/B



Muhato



Kivumu



Ubumwe



Secondary Schools

TTC



ESBF



CNG



Quantitative and Financial evaluation for roofs reconstruction with metal structure and CIS BG-28

Primary Schools					
	N. damaged roofs	Square Metal Pipes 60x40x1,5	Pre-paint Corrugated Iron Sheet BG -28	U element for sheets anchorage	Pre-paint CIS roof ridge element
		pcs (6m each) 14,000 FRW	m (width 80cm) 5,500 FRW	pcs 180 FRW	pcs (3m each) 9,900 FRW
School Name					
Umubano II	1	-	44	160	2
Umubano IV	7	210	740	3.552	24
Umubano III	4	120	420	2.016	11
Umubano I/A	12	225	1.080	4.320	20
Umubano I/B	1	-	16	72	-
Gacuba II/B	8	240	840	4.032	24
Muhato	16	480	1.680	8.064	48
Kivumu	6	180	640	3.072	21
Ubumwe	0	-	-	-	-
Nkama	6	180	640	3.072	21
Total	61	1.635	6.100	28.360	171
Total cost FRW		22.890.000	33.550.000	5.104.800	1.692.900
Grand total cost FRW					63.237.700

NB. Labour cost should be around the 30% of indicate total costs for materials purchased in Kigali (transport fees not included)

Secondary Schools					
	N. damaged roofs	Square Metal Pipes 60x40x1,5	Pre-paint Corrugated Iron Sheet BG -28	U element for sheets anchorage	Pre-paint CIS roof ridge element
		pcs (6m each) 14,000 FRW	m (width 80cm) 5,500 FRW	pcs 180 FRW	pcs (3m each) 9,900 FRW
School Name					
ESEGI	2	60	210	1.008	6
ETAG	0	-	-	-	-
TTC	6	216	720	3.360	54
ESBF	6	324	1.080	5.040	68
CNG	9	480	1.640	6.560	48
Ecole d'Arts	3	90	320	1.536	11
Petit Sem	0	-	-	-	-
GSNDA	0	-	-	-	-
Total	26	1.170	3.970	17.504	187
Total cost FRW		16.380.000	21.835.000	3.150.720	1.851.300
Grand total cost FRW					43.217.020

NB. Labour cost should be around the 30% of indicate total costs for materials purchased in Kigali (transport fees not included)

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