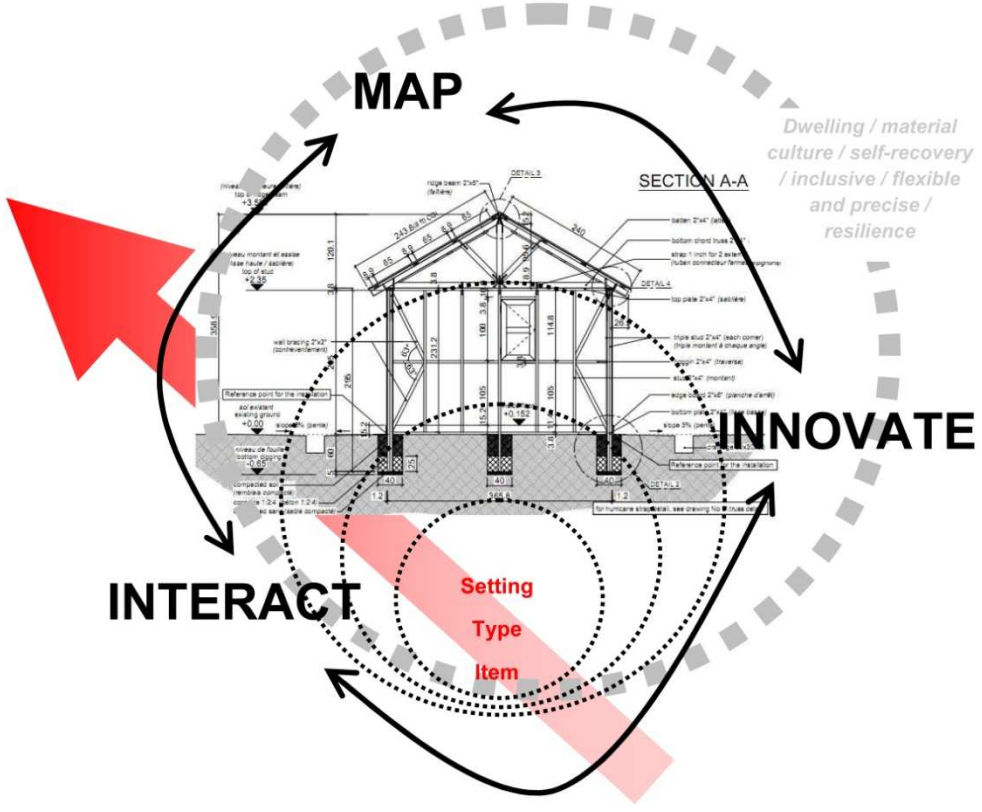
Shelter Research Unit Presentation for the SM11a

SRU documentation effort

12/05/2011

SRU overview

- Shelter Research Unit: back office research to support field practitioners
- Initiative from Benelux Red Cross societies and IFRC, contributing to the Global shelter program
- Focus on material and technical aspects of shelter
- Different phases: relief, recovery, risk reduction …
- End goal: Better material and technical solutions



Research diagram

SRU as facilitator and catalyst of research; ‘translation’ needed between sectors

SRU ambitions

1. Ongoing research with and VUB
   - TU/e: Energy pump; WWTSFS; Strap connections; Mapping
   - VUB: Component system; bamboo connections
2. Research Atalier
3. Localised solutions: Reoccurring disaster contexts
4. Speed kits: Rapid deployable solutions
5. Mapping (SRUde)

... Networking and funding objectives

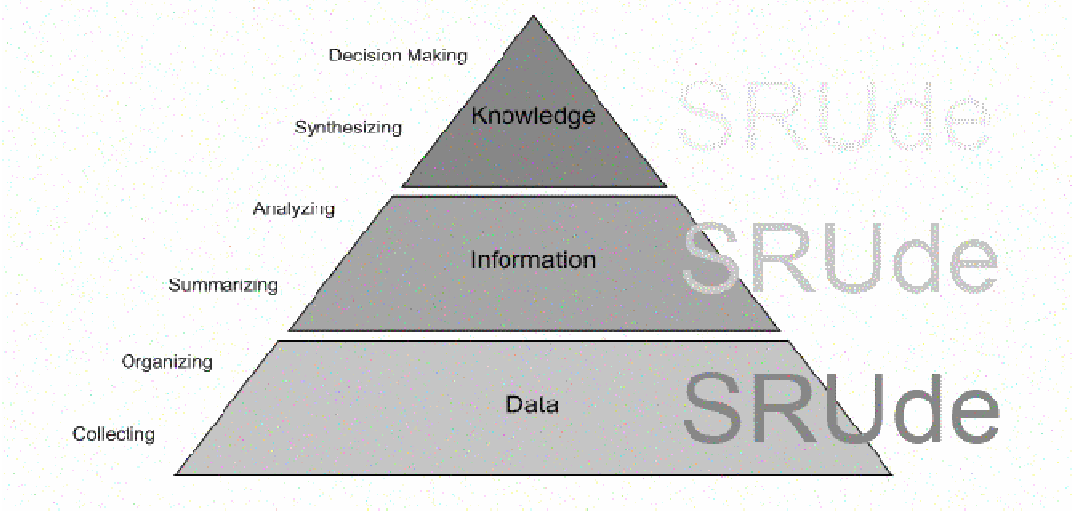
Documentation effort SRUde

- Ties in with ‘mapping’ ambition
- Knowledge platform
  - Mainly for shelter practitioners, but also private and academic sector
  - Technical and material aspects of shelter
- Backbone: Web-based database
- Stage: from conceptualisation to development

Objectives of SRUde

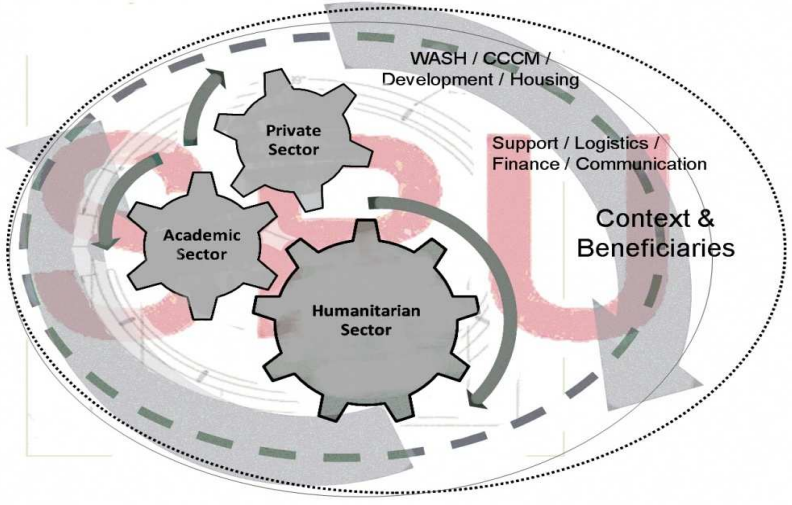
- Contribution to learning and research
- Indirect decision support
- Knowledge exchange

- Specific objectives:
  - •Collect information
  - •Organise info
  - •Share info with end users
  - •Some analysis



End-users

- shelter delegates/ managers
- local technical staff
- coordinators
- FACT/ ERU members
- Technical experts
- Researchers
- Private sector
- ...

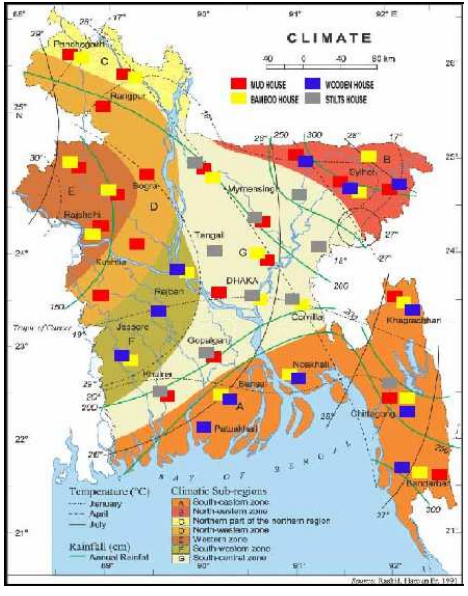


Ongoing:

Detailed information needs assessment and stakeholder analysis

Data sets

- Shelter solutions: documentation starting from the physical structures
- (Linked to) Reference library on technical subjects
- ‘Filtering’ layers
  - Climate data
  - Hazard occurrence
  - Shelter actors
  - Local building practices
  - ...



From Rashid, R. (2007, September 24) Traditional House of Bangladesh: Typology of house according to materials and location

Data generation

- Wide range of sources
  (shelter practitioners; manufacturers; universities etc)
- Results of Information needs assessment will help in selection of documents
- Interface: web-based and interactive
  - Shelter solutions
  - Links page (including research recourses and technical references)

Shelter Research Unit

Search

Continent ... Select a continent ... | Disaster type ... Select a disaster types ...
Country ... Select a country ... | Publication date ... Select a Publication Date ...
Climate ... Select a climate type ... | Program option ... Select a option ...
Size ... Select a range ... | Wind resistance ... Select a category
Walls ... Select a wall type ... | Available docs ... Select kind(s)

advanced search | Search

Submit solution >

> Download Template
> Submit shelter solution

Latest shelter solutions

Date	Country	Disaster	Summary
02 May 11	Burundi	Other	Mud brick house, with CGI sheets
02 May 11	Indonesia	Floods	Collective E-shelter - plastic sheeting
02 May 11	Indonesia	Flash floods	Flood resistant house on poles - concrete
01 May 11	Kenya	Flash floods	Mud brick house - stone foundation
01 May 11	Kazakhstan	Earthquake	
29 Apr 11	Benin	Fire	
29 Apr 11	Burundi	Other	T-shelter with wooden frame
29 Apr 11	Cambodia	Civil unrest	
28 Apr 11	Haiti	Other	T-Shelter with wooden cladding
25 Apr 11	Indonesia	Flash floods	
24 Apr 11	Burundi	Flash floods	
24 Apr 11	Haiti	Landslide (Wet)	
24 Apr 11	Indonesia	Landslide (Wet)	
22 Apr 11	Liberia	Storm surge	
22 Apr 11	Philippines	Landslide (Wet)	
21 Apr 11	Nigeria	Civil unrest	
20 Apr 11	Afghanistan	Flash floods	Family Tent

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DRAFT

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5/4/2011

Niche?

Existing

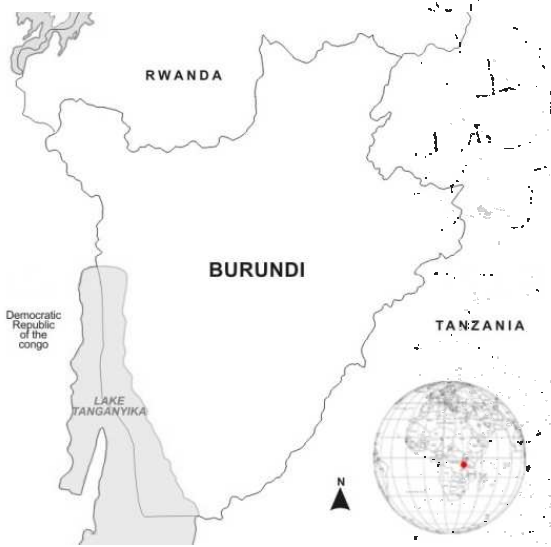
- Shelter Centre library
- Transitional shelters; 8 designs
- Shelter projects 2008/2009
- Existing resource centres (CRAterre; SKAT; Practical action etc)
- IFRC shelter projects database
- ...

SRUde

- Focus on technical: starting from physical structure
- Documentation of existing solutions, not only best-practice Where do people life in after disaster?
- Documentation allows for gap-finding and further research
- Interaction of private, academic and humanitarian sector
- Research/ product development focus

Next steps

- Information needs assessment
- Refining the database infrastructure with TU/e
- Filling in the data sets
  - Mapping in South east Asia; and from other sources
  - Technical reference catalogue
  - Associated layers
- Set up of interface (test phase)



Practical application

Burundi mapping experiment

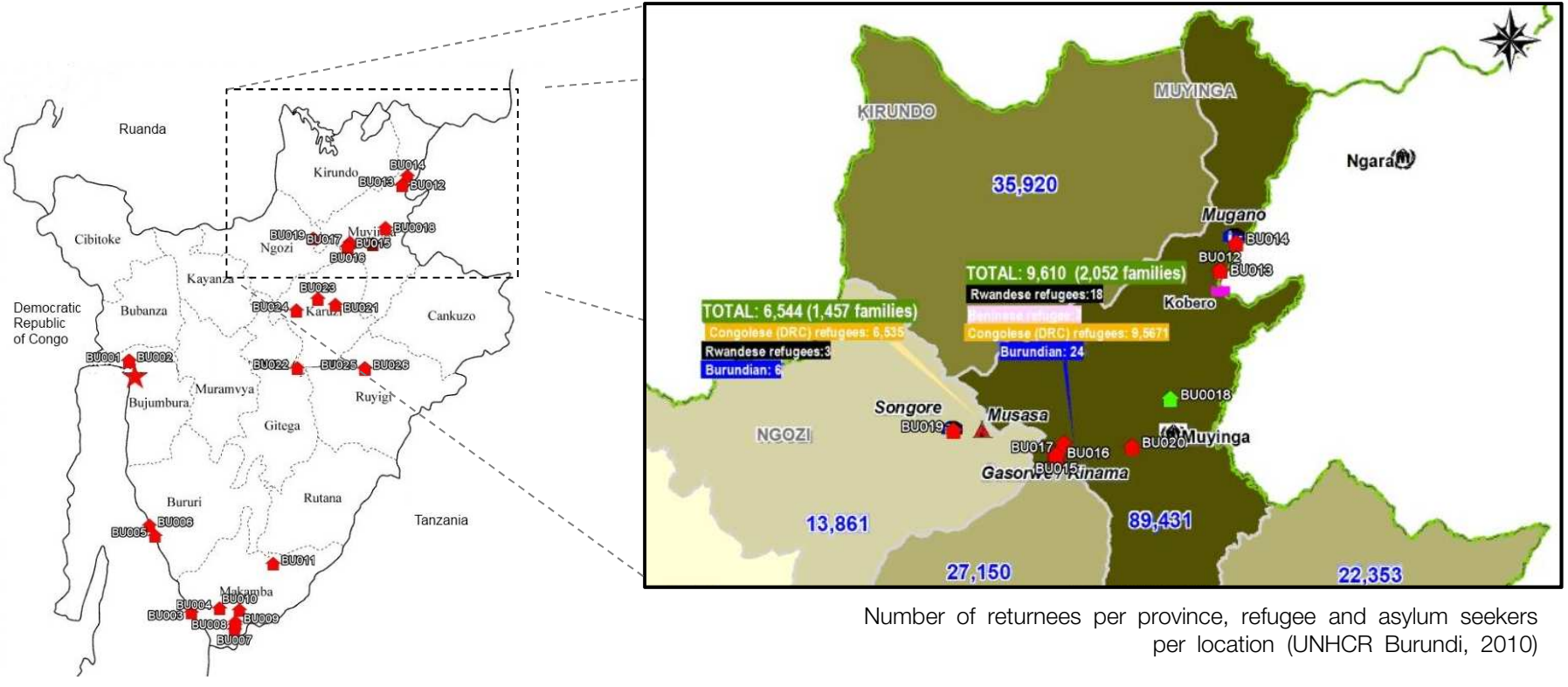
Burundi background

- Number of people displaced: 163.667 of whom 24.000 refugees and 32.000 returnees (UNHCR, 2011)
- Peak displacement: 800.000 in 1999 (IDMC)
- Some occurrence of floods, landslides, draughts and storms
- Recovery phase: reintegration high on agenda
- Current concerns:
  - Food insecurity
  - Political impasse
  - DRC?

26 Types

Housing and shelters by/for people affected by disaster

Returnees in Muyinga



Number of returnees per province, refugee and asylum seekers per location (UNHCR Burundi, 2010)

BU-013

BU-017

Temporary shelter solutions implemented by agencies

BU-020

BU-008

BU-007

BU-012

BU-018

BU-018

BU-020

Data per shelter

- Systematic documentation of solutions
- Not every shelter will have a complete set of data: minimum documentation requirements

Category	Atributes	Format
Identification	ID Number	Unique number
	Name of Shelter	Text
	Date of collection	Date
	Year of Construction	Date
	Implementer	Text
Location and Context	Zone	Drop down box
	Country	Drop down box
	Location	Text
	GPS Latitude	Number
	GPS Long	Number
	Climate Type	Drop down box
	Type of Disaster	Drop down box
Properties	Length (m)	Number
	Width (m)	Number
	Height of gutter (m)	Number
	Ground area per HH (m2)	Number
	Approx Costs (USD)	Currency
	Construction Time (days)	Number
	Number of inhabitants	Number
	Phasing	Drop down box
	Settlement option	Drop down box
Performance	Intended Lifespan (years)	Number
	Flood resistance	Drop down box (scale 1-3)
	Wind resistance	Drop down box (scale 1-3)
	Earth quake resistance	Drop down box (scale 1-3)
	Wind resistance	Drop down box (scale 1-3)
Materials	Foundation	Text
	Structure	Text
	Skin	Text
	Roof structure	Text
	Roof	Text
Available documents	Narrative	yes / no
	BOQ	yes / no
	Drawings	yes / no
	Pictures	yes / no
	Comments	Text

SRUde Shelter overview sheet

BU001 UNDP House for returnees 2010

Location Buterere, Bujumbura
GPS 03°19'27" S 29°21'10" E
Built by UNDP
Construction date July 2010
Number of inhabitants 7
Number of rooms 3
Ground area 35 m²
Construction costs 620 USD
Cost/ m² 18 USD
Construction time 21 days

Available documentation

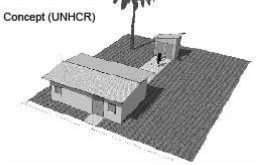
- ☑ Pictures
- ☑ Drawings
- ☑ Priced BoQ
- ☑ Pictures
- ☑ Satalite picture
- ☑ GPS coordinates
- ☐ Site plan

Hazard resistance

The site is located on the northern outskirts of Bujumbura. UNDP and CARE International have built respectively 120 and 80 houses here for extremely vulnerable households and returnees. Surrounding these houses one can find various sort of dwellings of new settlers. Each house stands on a plot of approximately 15 x 10 meters and has access to a household latrine. Construction of house and latrine is accompanied with hygiene promotion and environmetal projects.

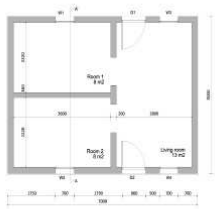
1 cubicle for 1 household

Concept (UNHCR)

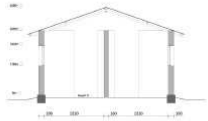


The UNDP house follows the standard for returnee housing as esthablished by UNHCR. The house has 1 living roomd and 2 bedrooms. The foundation is made with stones and cement. The wall is of adobe blocks (size ca. 34 x 16 x 13 cm). Beneficiaries are expected to produce the blocks. For one house around 1200 blocks are needed. The house has 4 windows and 2 doors, and a roof covered with CGI sheeting (BG32). The roof is tied down with binding iron, however after occupation additional tiedowns have been added on the exterior of the house. The walls are plastered with mud.

Floor plan



Cross section



Front elevation

Side elevation

Roof structure made of eucalyptus poles (D= ca 10cm)

Added Tie-down of roof

Windows 75 x 55 cm

SRUde Shelter overview sheet

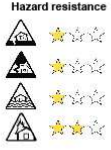
BU026 UNHCR - NRC Shelter for refugees 2010

Location Bwagiriza refugee camp, Ruyigi
GPS 03°21'19.66" S 30°16'25.18" E
Built by NRC
Construction date 2010
Number of inhabitants 8
Number of rooms 4
Ground area 26 m²
Construction costs 580 USD
Cost/ m² 23 USD
Construction time 11 days

Available documentation

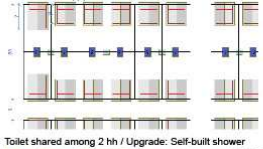
- ☑ Pictures
- ☑ Drawings
- ☑ Priced BoQ
- ☑ Pictures
- ☑ Satalite picture
- ☑ GPS coordinates
- ☑ Site plan

Hazard resistance



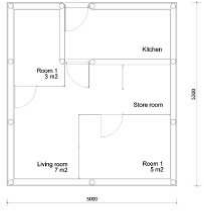
In 2009 at least 2,500 Congolese refugees were moved from Burundi's central province of Mwaro to the eastern Ruyigi province in a move aimed at consolidating camps across the country. In May 2011 ca 4700 refugees (most of them from the Banyamulenge ethnic group from Congo) live in Bwagiriza. UNHCR and implementing partners, in case of this shelter NRC, have built shelters. Each house stands on a plot of approximately 14 x 8 meters and has access to a shared latrine and shower. Currently the camp is being expended to host up to 7320 persons.

Block plan, with shelters, latrines and showers

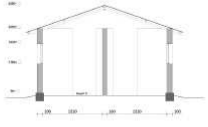


Toilet shared among 2 hh / Upgrade: Self-built shower

Floor plan



Cross section



Front elevation

Side elevation

Frame made of eucalyptus poles

Beneficiary upgrade: wattle and daub

Beneficiary upgrade: partition walls

'Windows'

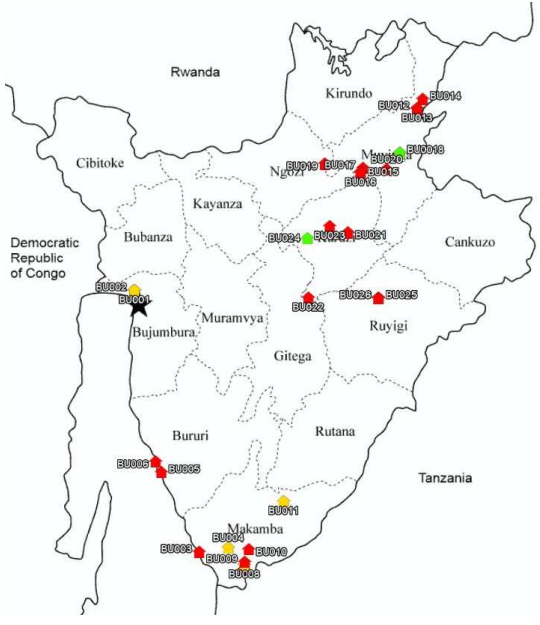
The house has 1 living room, store room, kitchen and 2 bedrooms. Like most shelters in Bwagiriza, the initial plastic [See BU0025] sheeting is re-placed and the frame is covered with wattle and daub as wall skin (done by inhabitants). Upgrade to wattle and daub for one house costs around 15 USD. The house has 1 door; several holes in the wall for ventilation, and a roof covered with CGI sheeting (BG32). The roof is tied down with binding iron.

publication date: 10/05/11

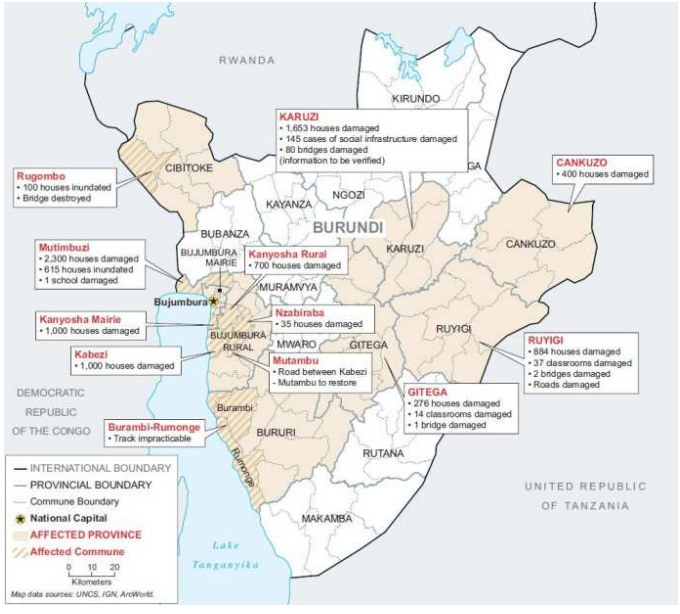
Description

- What does exist? Where do people actually live in after disaster?
- Statistical analysis: prevalent building practices
  - For now on basis of nr of designs, not number of houses built
  - End of 2011: 200 shelter designs?
- Overlay of datasets; Geographical analysis
- Transparency and institutional memory

Example 1



Flood resistance of designs



Burundi Floods 2006-2007 (OCHA Burundi, 2007)

- Overlay of different data sets (TU/e)
- Low availability of climatic/ hazard data
- Incremental precision
- Geographical peculiarities at local level

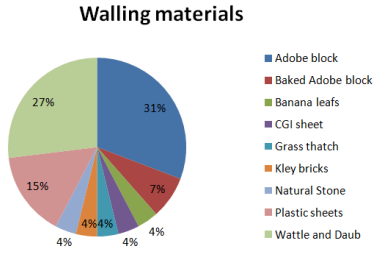
Research Potential 1

Example 2

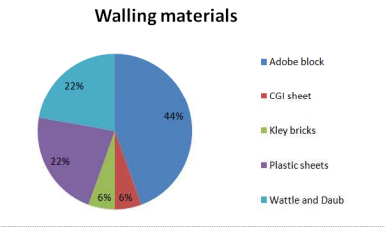
- Documentation of prevalent building practices
- Statistically untenable at the moment
- Adding ‘nr houses built’ is a challenge



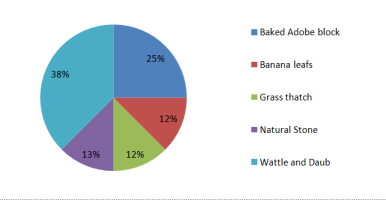

26 designs



18 designs by agencies

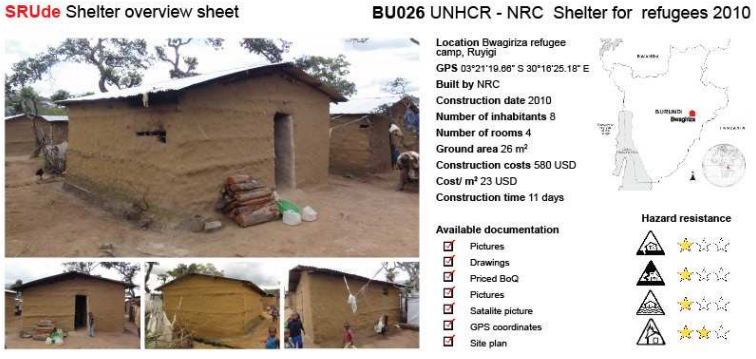


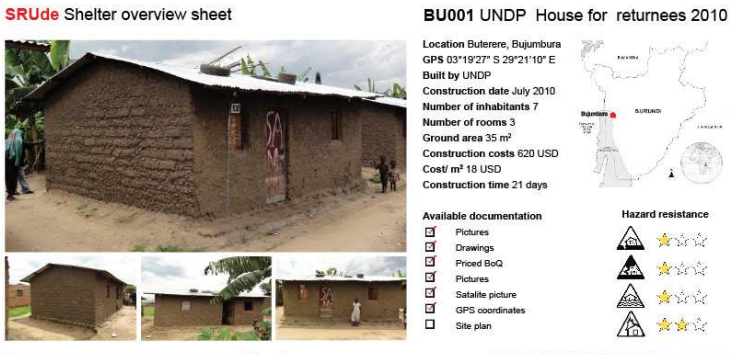
8 self-build designs



Comparison

- Possibility to carry out evaluation by comparison
- BU001 and BU026: ‘Wattle vs. Daub’
  - E.g. Compare hazard resistance; cost (per square meter)
  - Carefully look at variables





Future research

- Basis of innovation: Innovation as an improvement of current practice... “A novel working whole”
- Identification of in-depth research projects, e.g:
  - Local practices
  - Product development
  - Optimisation of building materials
- Different modalities for future research (e.g. Students, research projects)

Thank you

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