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Nous sommes solidaires.

Energy efficient buildings in reconstruction/Tajiksitan

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Caritas Suisse

Earthquake safe and energy efficient Housing Programme 2010-2011 in Vanj, Viloyati Mukhtori Kuhistoni-Badakhshon (Gorno-Badakhshanskaya avtonomnaya oblast – GBAO) Eastern Tajikistan

Phase I – 6 Houses :
Reinforced Masonry

Phase II – 9 Houses :
Ferroconcrete Framework with Infill in Bricks

Taschkent
Naryn
Kirgistan
Samarkand
Tadschikistan
Duschanbe
Vanj
Kuhistoni Badakhshon

Vanj

Vanj

20 Сол
ҶАШНИ ИСТИҚЛОЛ МУБОРАК!

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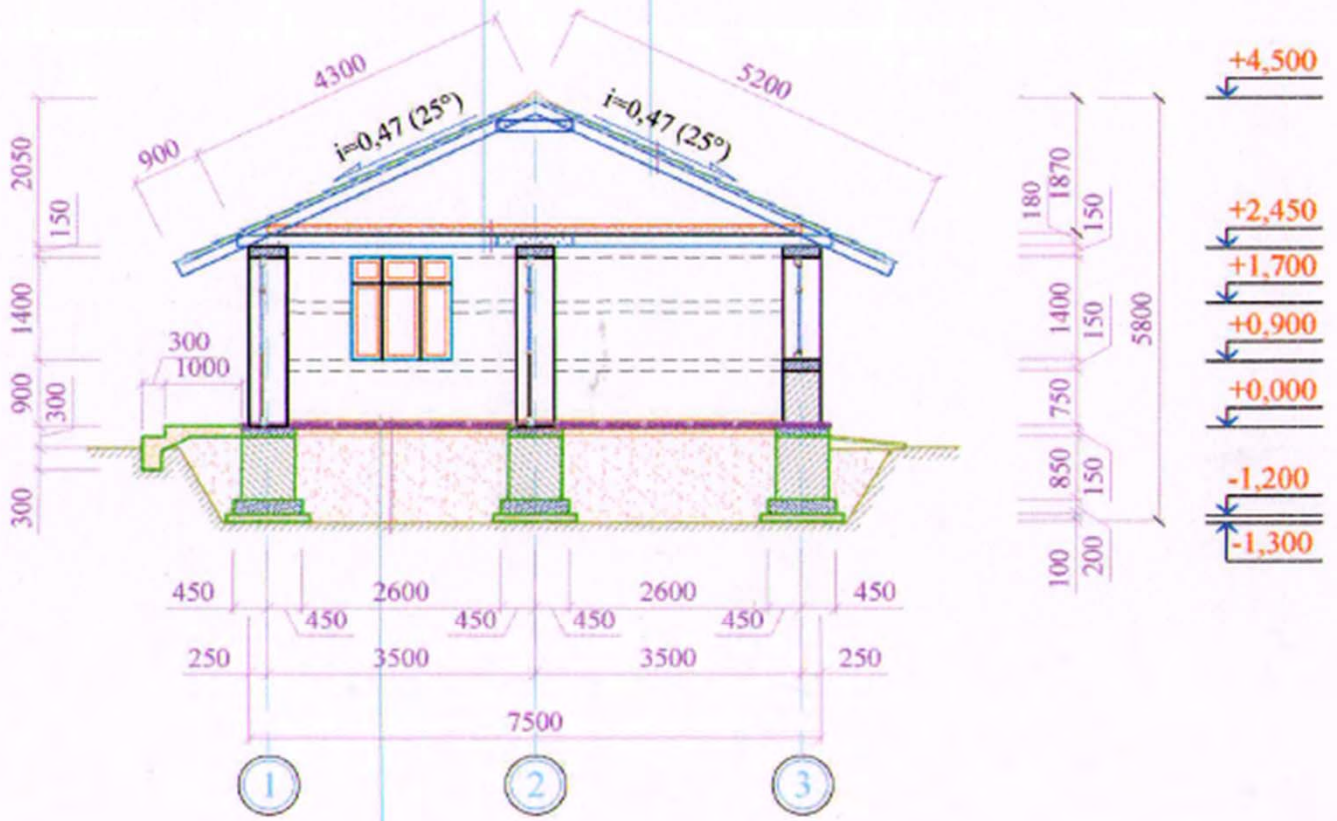
solidaires.

Разрез 1 - 1

1. Глиносаманная стяжка 100мм;
2. Слой рубероида ГОСТ 10923-93;
3. Обшивка из досок толщиной 30мм;
4. Деревянные балки покрытия сеч. 30х150мм;

1. Кровля - из черепицы на основании цементного раствора
2. Обрешетка - из брусков 50х50мм, шаг 400мм
3. Стропила - сеч. 50х150мм, шаг 800мм.



1. Сплошной настил из досок по ГОСТ 8242-75, - 30мм;
2. Лага сечением 50х50мм, шаг 600мм
3. Слой рубероида ГОСТ 10923-93;
4. Уплотненный смесь гравия и песка - 150мм;
5. Грунт основания - с втрамбованным щебнем 30-40мм.

unicef

1st status as on 02 May 2011 – 15% completion
Vanj phase I # 5 Shonazriev Zgher

2nd status as on 18 May 2011 – 27% completion
Vanj phase I # 5 Shonazriev Zgher

3rd status as on 24 May 2011 – 30% completion
Vanj phase I # 5 Shonazriev Zgher

4th status as on 08 June 2011 – 53% completion
Vanj phase I # 5 Shonazriev Zgher

5th status as on 22 June 2011 – 58% completion
Vanj phase I # 5 Shonazriev Zgher

6th status as on 30 June 2011 – 68% completion
Vanj phase I # 5 Shonazriev Zgher

7th status as on 15 July 2011 – 80% completion
Vanj phase I # 5 Shonazriev Zgher

8th status as on 21 July 2011 – 96% completion
Vanj phase I # 5 Shonazriev Zgher

9th status as on 30 July 2011 – 97% completion
Vanj phase I # 5 Shonazriev Zgher

10th status as on 10 August 2011 – 100% completion
Vanj phase I # 5 Shonazriev Zgher

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Energy efficiency calculation

(Ehrsam-Methode)

☑ mit Farbmarkierung

ENERGIEANALYSE UND LEISTUNGSBEDARF Beilage 1

Objekt:	Wiederaufbau von Häuser in Vanj, Tadschikistan	Projekt Nr.	

Objektdaten und Energieverbrauch			**Objektdaten für die Leistungsbedarfsberechnung**		
Gebäudehülle	205.9	m^2	Nettovolumenanteil	80.0	%
Gebäudevolumen	156.2	m^3	Nettovolumen	125	m^3
Luftwechsel pro Stunde Ist-Zustand	0.5	n/h	Minimal Luftwechsel Ist-Zustand	0.5	n/h
Luftwechsel pro Stunde Sanierung	0.5	n/h	Minimal Luftwechsel Sanierung	0.5	n/h
Ortskoeffizient c	44.0	$Kh10^{-3}$	Luftwechselvolumen Ist-Zustand	62	m^3/h
Energieträger	Steinkohle (Ko)		Luftwechselvolumen Sanierung	62	m^3/h
Vorh. Energieverbrauch	2000	kg Ko/a	Zusätzliches Lüftungsvol. Ist-Zustand	0.0	m^3/h
Umrechnungsfaktor f	0.130	kg Ko/kWh	Zusätzliches Lüftungsvol. Sanierung	0.0	m^3/h
Wirkungsgrad Ist-Zustand	88.4	%	Total-Lüftungsvolumen Ist-Zustand	62	m^3/h
Wirkungsgrad Sanierung	88.4	%	Total-Lüftungsvolumen Sanierung	62	m^3/h
Anzahl Zimmer oder Personen für WW	2	Stück	ΔT für den Luftwechsel	28.0	K
Energiebezugsfläche A_E	63.8	m^2			
Flächenanteil Fensterfläche A_W an A_E	0.1	Faktor			

Energieträger

Steinkohle

Umrechnungsfaktor f 0.13

n Tabelle eingeben

Flächen und durchschnittliche U-Werte		Ist-Zustand	Sanierung
	Fläche	U-Wert	U-Wert

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Energy efficiency

Jahresenergieverbrauch und Wärmeleistungsbedarf	Jahresenergieverbrauch			Wärmeleistungsbedarf	
	Ist-Zustand	Sanierung	Einsparung	Ist-Zustand	Sanierung
	kg Ko/a	kg Ko/a	kg Ko/a	W	W
Transmission	1420	985	435	8297	5995
Lüftung	119	119	0	560	560
Warmw asser	229	229	0	581	581
Wirkungsgradverluste	233	175	58		
Total inklusive Warmw asser	2000	1508	492	9438	7136
Jahresw irkungsgrad in %	88.4	88.4			
Einsparung/Leistungsreduktion in %			24.6		24.4

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Cost-benefit analyse

- Per month 2 bundles of wood are used for heating, each of a bundle cost of 50 Somoni / 10 CHF = 20 CHF per month
- The normal heating period is November to March i.e. 5 month = 5x20 CHF 100 CHF
- An average investment cost for the insulation is 350 CHF (labor + local materials as mud and straw)
- → after the 4th winter the investment is paying off

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Achievements

- 200 persons introduced into improved building practice
- University of Central Asia used best practice to enrich their curriculum for masons
- 2 local planning offices introduced to Ehrsam cost benefit calculations
- Increased awareness of INGO and government about insulation benefits
- 15 houses reconstructed for the most vulnerable

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Challenges

- Not all technology is socially and culturally accepted
  - PTD and local knowledge and science combination
- To introduce new technologies and policies don't start at the remotest place
  - Combine local action and national policy dialog

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Challenges

- Short term benefits for people vs longer term investments
  - Calculation and financing incentives, political and livelihoods priorities are different?
- The „Sodis“ challenge: technologies labeled as „poor“ like straw bale houses are difficult to introduce
  - How to make good innovation a demand?

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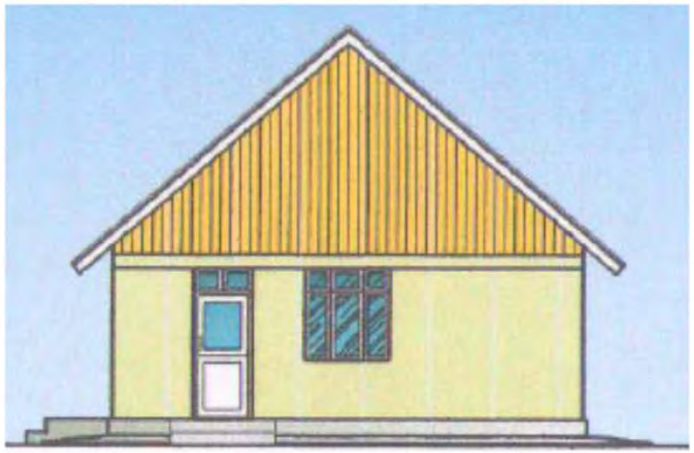
UNDP

REPIC

Renewable Energy & Energy Efficiency Promotion in International Cooperation

WFP



Vanj Shelter Programme

Construction of Seismic Resilient and Energy Efficient Houses

Implementation Period: September 2010 - September 2011

Лоиҳаи Сохтмонии Ванҷ

Сохтмони хонаҳои ба заминларза тобовар ва гарминигоҳдоранда

Санаи оғоз: - Сентябри, 2010 / Санаи анҷом: - Сентябри, 2011