Live comfortably

Lower heating costs
Clean indoor air

The Technical Catalogue 2015
Energy Saving Solutions for Kabul Households

geres
Afghanistan

GERES' catalogue of technologies adapted to Kabul private households, to promote solutions for sustainable energy consumption

Renovation of your house to reduce significantly fuel consumption for heating

The technologies in this catalogue provide an opportunity to improve energy efficiency of already existing houses. It should be possible to save from 30 to 50% of fuel used for heating, to lower energy bills and reduce CO_2 output.

Comfort comes first

Renovation of the house, thanks to passive solar technologies, insulation techniques and efficient heating systems enable to increase the indoor air temperature, for more stability and comfort.

Clean indoor air for a better health

Indoor air quality is crucial, as smokes are the first reason for pre–mature deaths of women and children in Afghanistan. Indoor smoke can be reduced with improved heating systems and better insulation!

Easy installation

GERES is committed to introducing innovations and systems which can be easily handed-over to local artisans. Features have been steadily adapted to local skills and materials' availability. They can be easily installed in traditional afghan houses.

Improve living conditions for ecology and sustainability!

The beneficial effects of energy efficiency on living conditions, on reduction of fuel consumption, and on the environment can be clearly linked to the Afghan specificities. The climate is semi-arid, with a mountainous and continental climate, harsh winters, very hot summers and scarce rainfalls.

The renewal of natural resources is slow and fuel prices for heating and cooking are considered exorbitant by most households.

After 30 years of research in Central Asia, this catalogue covers a wide range of prices and a mix of technologies allowing 30% to 60% of fuel saving for the best combinations of solutions. Perfectly adapted to afghan households, they allow reduction of fuel consumption and preservation of natural environment.

The technologies are proved efficient: in Kabul more than 3,000 households are already equipped with a mix of technologies to gain and keep the heat inside. Give it a try!

Find your technology!

More info | page 8

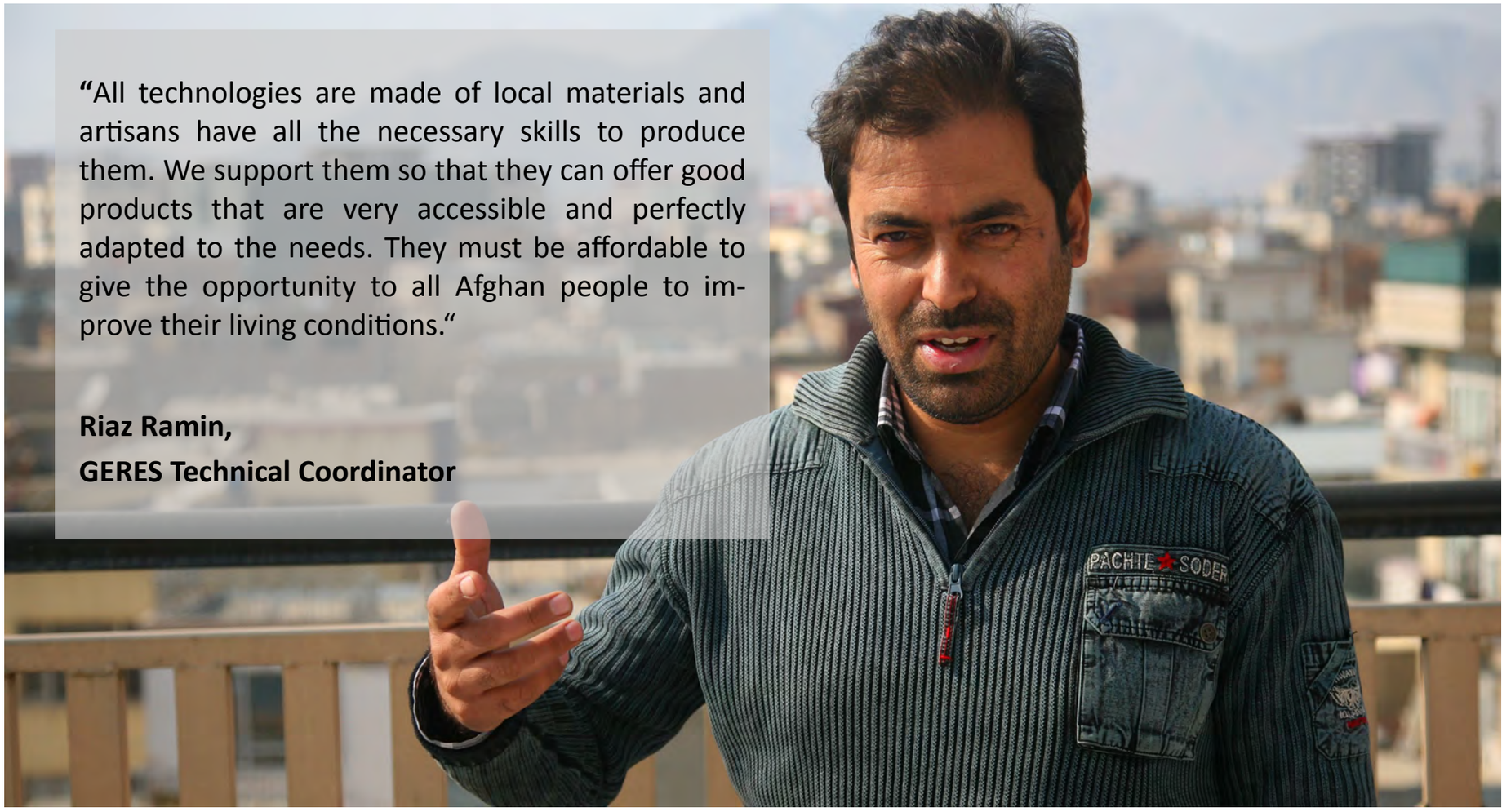
LIVING ROOM

Technologies to improve comfort and reduce heat costs inside your house, and facilitate cooking activities in the winter.

ADDITIONAL WARM ROOM

The Passive Solar Veranda will offer you an additional warm room, free of heating charges!

PACKAGES



"All technologies are made of local materials and artisans have all the necessary skills to produce them. We support them so that they can offer good products that are very accessible and perfectly adapted to the needs. They must be affordable to give the opportunity to all Afghan people to improve their living conditions."

Riaz Ramin,
GERES Technical Coordinator

PURCHASE

Be in touch with qualified artisans in Kabul for the best price and quality!

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LOW EMISSION DEVELOPMENT

A vision and a strategy: we can all contribute to a better future!

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Savings per year
(fuel consumption reduction)

★ : Less than 40 USD
★★ : From 40 to 80 USD
★★★ : From 80 to 120 USD
★★★★ : More than 120 USD

Financial investment

$: Less than 150 USD
$$: From 150 to 200 USD
$$$: From 250 to 400 USD
$$$$: More than 400 USD

Duration of **return on investment**

: Less than 2 years
: From 2 to 5 years
: From 5 to 10 years
: More than 10 years

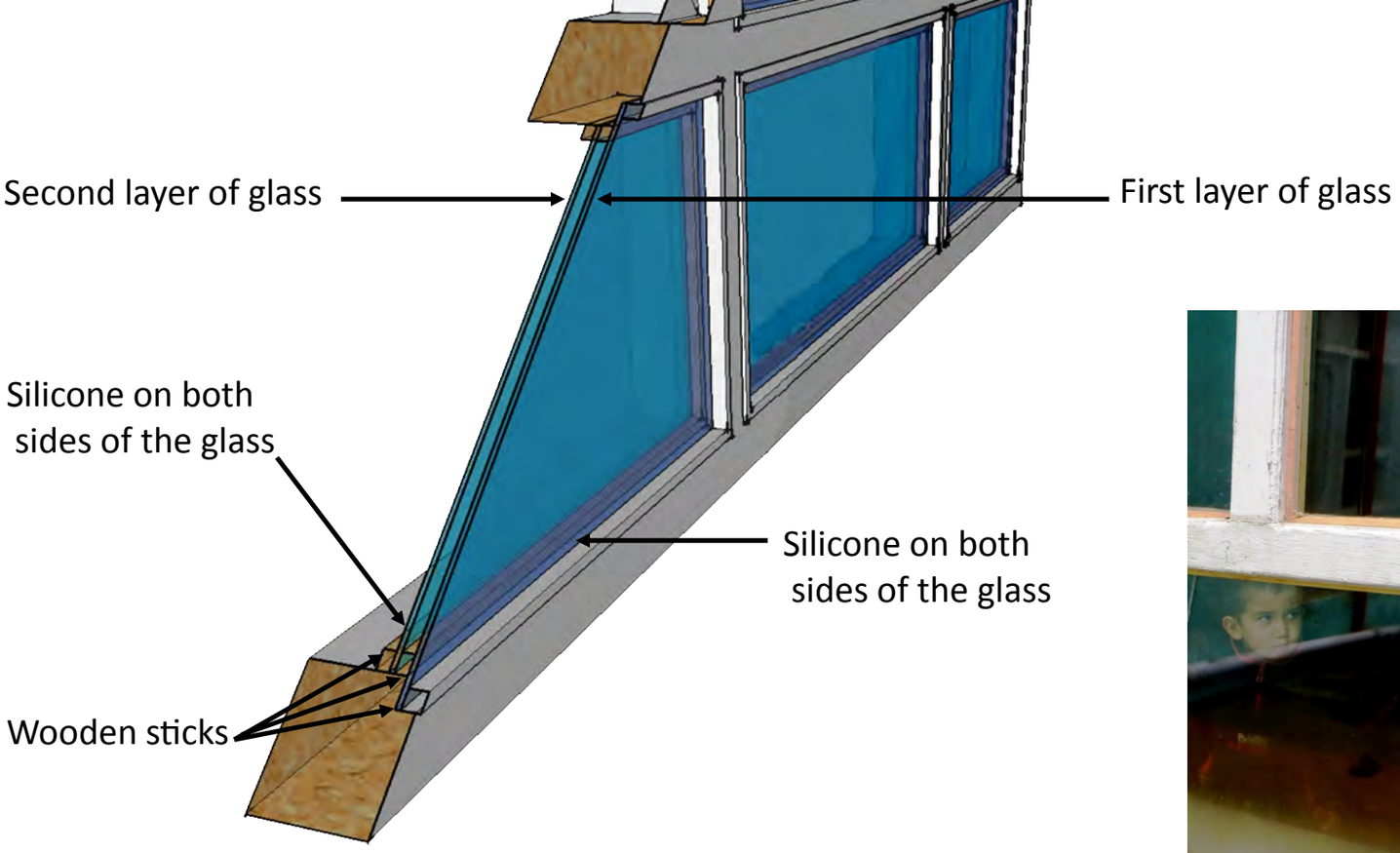
- Better comfort in living rooms
- Reduction of heating costs
- Clean indoor air

DOUBLE-GLAZING

Insulation of the living room windows to reduce the energy bill

For 10 m² of overglazed windows

Double-glazing helps to maintain more constant temperatures inside your living rooms.



Less than 13 USD per m²
More than 30% fuel saving

Windows are the main factors of heat loss in houses, as their large surface are in direct contact with outdoor air and cold temperature. Over-glazing your windows enables to keep the heat inside and to significantly improve the comfort in your living room, while reducing fuel consumption.

Ventilation is very important to maintain a safe and clean indoor air. When over-glazed, the windows should be regularly open, especially during sunny times, and while cooking or boiling water.

INSIDE ROOF INSULATION

Insulation of the ceiling of your house

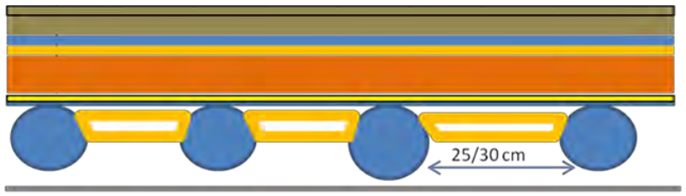
For 17 m² of insulated roof

Roof insulation reduces significantly heat losses from the roof (at least 30% of the heat losses).

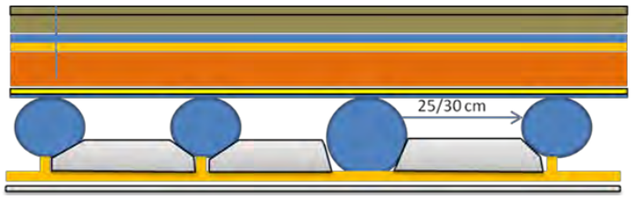
Main conditions for application:
- **Traditional roof with wood or metal beams**
- **The targeted ceiling must be at the top of the house**
- **Roof in good condition, with no leakage**
- **The targeted room should be the living room used in winter**

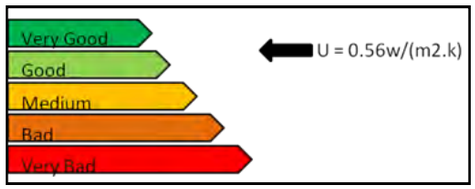
Several kinds of materials can be used, as external and/or internal roof insulation.

For traditional roof:
example of insulation
with Glass Wool (5 cm) two layers



For traditional roof:
example of insulation
with Polystyrene (5 cm) thick





Around
10
USD
Per m²

Insulation of the roof using **glass wool**

Around 30% fuel saving

Insulation of the roof using **polystyrene**

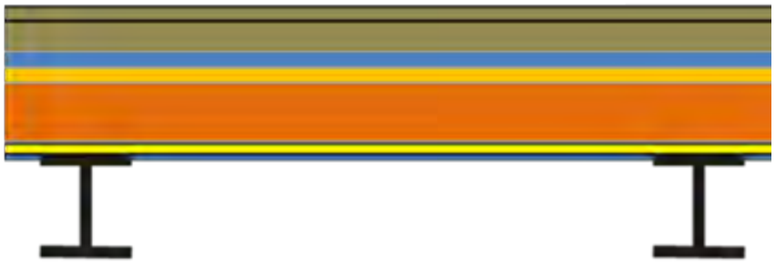
OUTSIDE ROOF INSULATION

Of Traditional Roof with mud and straw mix (30% / 70%)

For new constructions

To maximize insulation properties of the traditional roof, a mix of mud (30%) and straw (70%), with a specific thickness of 12cm after compression, will significantly reduce the heat losses.

Don't hesitate to upgrade your house when doing roof renovation or building a new room!



Less than 10 USD per square meter for roof renovation.

Negligible cost if directly applied on new constructions.

Indoor air quality

A clean and healthy environment inside your house

Indoor air pollution is one risk you cannot set aside!

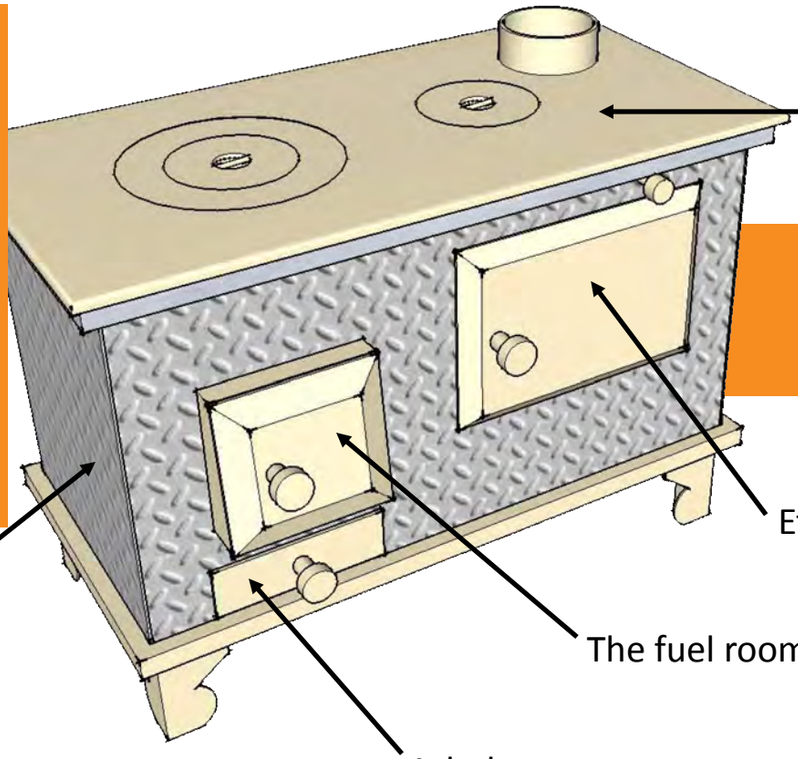
The smoke of heating stoves can accumulate dramatically inside the rooms: it causes major chronic health issues in Afghanistan. In worse cases the carbon monoxide from incomplete combustion can even lead to instant death.

Regular ventilation will reduce contaminants by diluting indoor air with outdoor air, thus significantly improving the indoor air quality, health and comfort.

Not smoking indoors or preventing others from doing so is advised, even more with children. If smoking indoors cannot be avoided, increase ventilation. To prevent carbon monoxide intoxication, keep gas appliance properly adjusted and make sure to ventilate your house regularly while using coal or wood stoves.

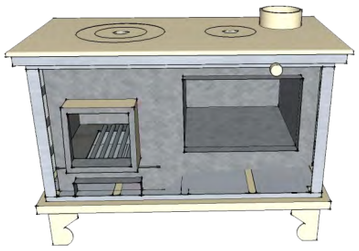
CHARI V15

Thermal Mass for long heat release!



Decrease your fuel consumption by 30%!

Adel Mirza,
Responsible for Innovations and Development

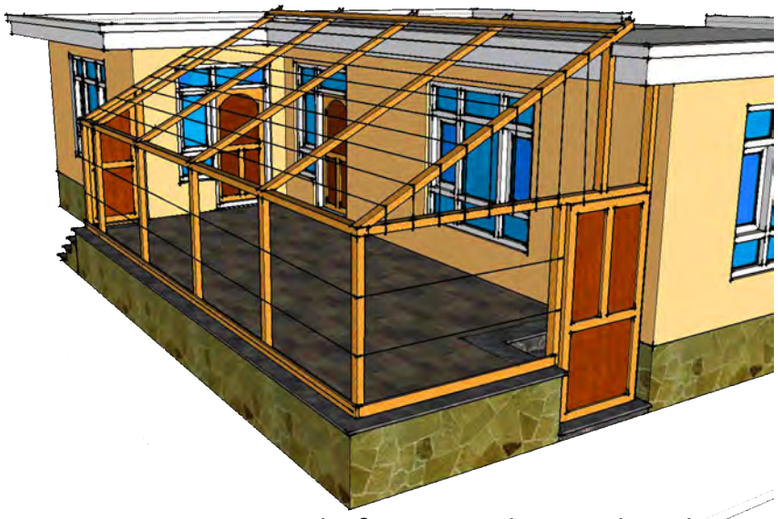


CHARI V15

Heating your house and cooking for your family is not a burden anymore. Enjoy the long lasting heat of this improved chari, released all evening long and over the night. With the efficient oven, you will really enjoy cooking, and preparing new dishes: bake bread in less than 10 minutes, and cook pies and low-fat meat!

CHARI V15 is the best heating and cooking solution, for the whole family!

The fuel room can be easily replaced, which significantly extends the life cycle of the CHARI V15 up to 15 years!



Veranda frame with wood and wire

Decrease your fuel consumption by at least 30%!

Frame covered with a plastic sheet in winter, to gain heat

An additional warm room all day long!

10% temperature increase inside your house!

It might not seem that much,

but the Passive Solar Veranda makes a significant difference in your life.

An **additional warm room** in winter can be used for domestic tasks, social life or for education of the children.

The **veranda gains sun energy** and transfers the heat through the openings from the veranda into the house during daytime. During the hot season, the plastic is removed and the structure can be covered with plants, reeds, etc., to be in the shade and cool down the house.

PASSIVE SOLAR VERANDA

Additional Room in wood frame, covered by plastic in winter

Built on the terrace facing south

Extra warm room in winter, free of heating charges

Fuel savings and warmer inside the house

Facilitated women housework

Warm water without fuel consumption

Improved hygiene and health of the family

Protection from the dust

Cool room in the summer

TIPS

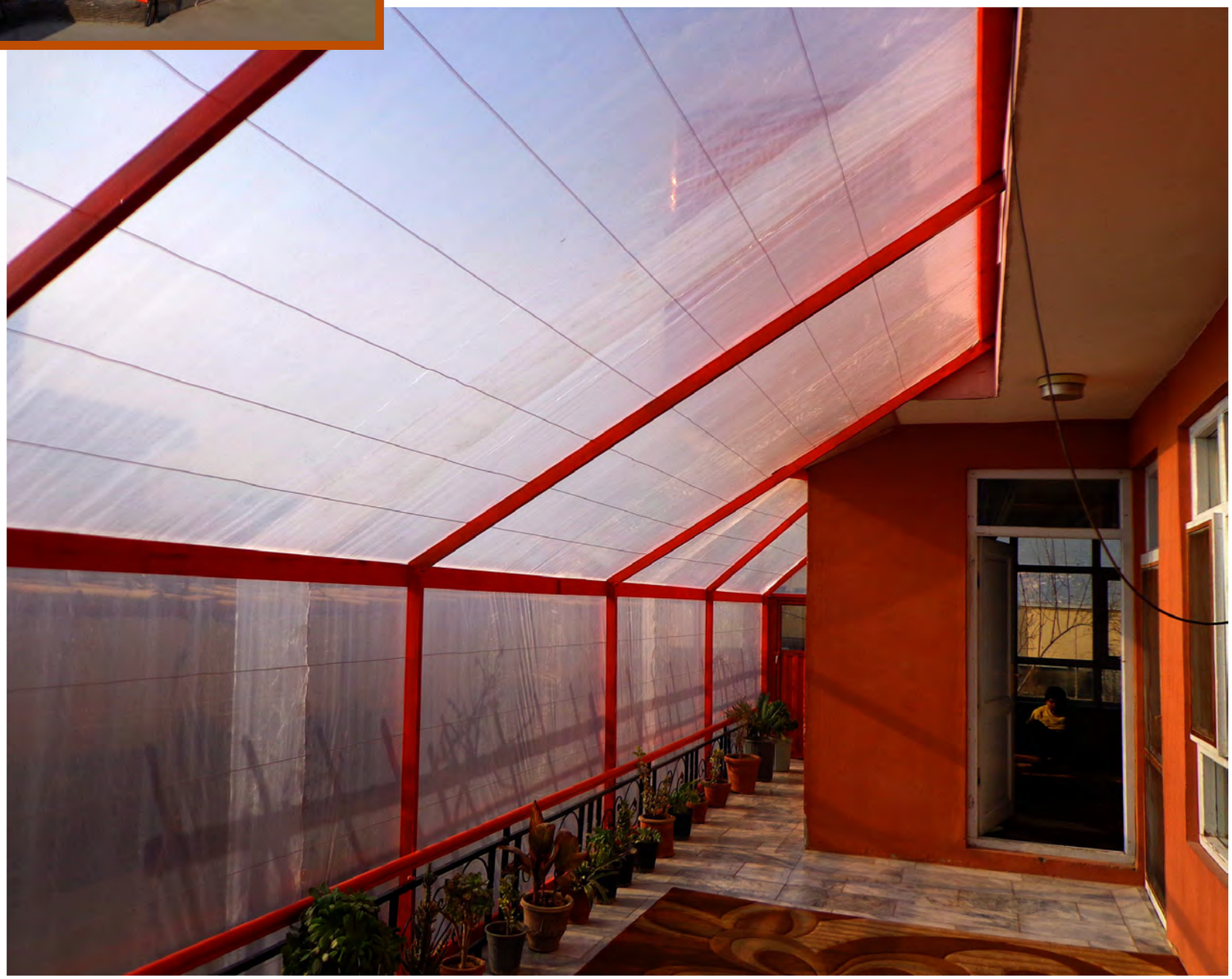
Additional insulation of the living room can significantly improve the efficiency of the veranda!

Paint the frame in plenty of colors and cover it in the summer with reeds or plants to turn it into a cool space for relaxing with family and friends!

PASSIVE SOLAR VERANDA

Metal Frame

Metal structure with long-lasting and **colored protection**.



PASSIVE SOLAR VERANDA

Glass and/or Polycarbonate

★★★ $ $ $ $

Much more than a veranda.

A world of comfort, in winter and in summer!

In summer, turn the veranda into a cool space!

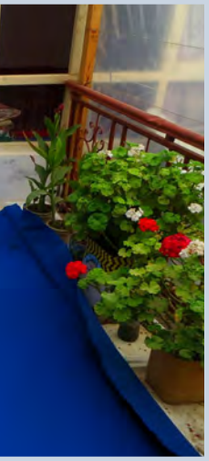
During the summer, use reeds, plants and even mosquito nets to create a nice and cool area for the whole family!

In winter, a furnished and comfortable veranda!

Ventilate regularly during the day:
Open doors and windows!

“The veranda brings many benefits to women during the cold months of the winter. Their life is better and they can even develop income generating activities. The health of the whole family is improved, and some winter classes for the children can be organized in the warm veranda.“

Rahela Forugh,
Communication Team Leader



The veranda is a suitable place
for **home-based jobs in the winter!**

Solutions packages,
for more efficiency!

+

Passive Solar Veranda

✓

+

Double-Glazing

✓ ✓

+

Roof Insulation

✓ ✓ ✓


Roof Insulation
Double-Glazing
Passive Solar Veranda

Qualified artisans in Kabul

Skills	Name	Father name	Contact	Kabul District	The artisans are qualified for the technologies :					
					Double-glazing	Roof insulation	Improved stove	Veranda wood frame	Veranda metal frame	Veranda glass and/or polycarbonate
Carpenter	Mh.Hasan	Mh.Asghar	0799555164	District 5				■		
Carpenter	Samullah	Enayatullah	0702644533	District 5				■		
Carpenter	Enayatullah	Mh.Akhzar	0773419887	District 5				■		
Carpenter	Mh.Husain	Mh.Asghar	0792249848	District 5				■		
Carpenter	Sultan Mohd	Nik Mohd	0791890069	District 5	■	■		■		
Carpenter	Noor Ajan	Sultan Jan	0798194685	District 5				■		
Carpenter	Shir Mohd	Dar Mohd	0799791926	District 7	■	■		■		
Carpenter	Salamut Shah	Mir Ahmad Shah	0778088651	District 7	■	■		■		
Carpenter	Mohd Wali	Sahar Gul	0799869968	District 8	■	■		■		
Carpenter	Zahid	Agha Gul	0772025577	District 8		■		■		
Carpenter	Abdul Jabar	Abdul Wahab	0780306135 / 0778225079	District 8				■		
Carpenter	Wazer Gul	Sayed Alam	0777201242	District 8	■	■		■		
Carpenter	Abdul Manan	Abdul Ghias	0797645570 / 0781729730	District 8	■	■		■		
Carpenter	Mohd Ashraf	Wali Akbar	0781478133	District 7				■		
Welder	Mohd Qasim	Enayatullah	0786653351	District 5					■	■
Welder	Mohd Nazer	Faqer Mohd	0775506815	District 8	■	■			■	■
Welder	Mohd Nasir	Sher Ahmad	0700273398	District 7					■	■
Welder	Sayed Halim	Sayed Afraz	0799036326	District 7					■	■
Carpenter	Haji Esmail	Haji Eqbal	0779952945 / 0799423249	District 7	■	■		■		
Carpenter	Mohd Arif	Hafizullah	0779952945	District 5	■	■		■		

Skills	Name	Father name	Contact	Kabul District	The artisans are qualified for the technologies :					
					Double-glazing	Roof insulation	Improved stove	Veranda wood frame	Veranda metal frame	Veranda glass and/or polycarbonate
Carpenter	Mohmand	Char Gul	0799423249	District 7	■			■		
Carpenter	Najeebullah	Abdul Kabir	0779276548	District 5	■	■		■		■
Carpenter	Abdulkarim	Abdulhakim	0799311367	District 5		■		■		
Carpenter	Tawakal Ulgaq	Mohd Sediq	0799739557 / 0785688053	District 8				■		
Carpenter	Parwiz	Mira Jan	0799637155	District 5	■			■		
Carpenter	Yar Mohd	Nik Mohd	0796488860	District 5	■			■		■
Carpenter	Sherin Agha	Zulf Ali	0772533556	District 5				■		■
Carpenter	Shier Ahmad Shah	Mer Haider	0797721975	District 7				■		■
Welder	Moh.Esmail	Noor Mh	0795153292	Not specified			■	■		
Carpenter	Rohullah	Hafizullah	0773504114	District 5	■	■		■		
Carpenter	Shukrullah	Mohd Esmail	0779106418 / 0765046035	District 8	■			■		■

A SUSTAINABLE WORLD, FOR ALL OF US

By 2060, 1 out of every 2 Afghans will live in cities. Kabul doubled its population over the past decade and is the fifth fastest growing city in the world: more than 4 millions inhabitants, 15% of the Afghan population.

In most residential areas, construction patterns have low insulation and energy intensive heating devices. Many households have difficulties to meet their energy needs and spend a major part of their budget purchasing fuels. In Kabul, the potential market for the developed energy saving solutions stands at more than 300,000 households.

Afghanistan is following the trajectory of countries with heavy reliance on biomass resources and omnipresent energy poverty. Wood is still the main source of energy for Kabul inhabitants and leads to terrible air pollution. Inside the houses, the smokes affect mainly women and children and are the main cause for premature deaths in Afghanistan. Therefore reducing fuel consumption through energy saving solutions also contributes to the livelihoods of the whole family through improved health, cleaner kitchen and indoor air, and less money spent on fuels.

Afghanistan is the 15th most vulnerable country in terms of climate change vulnerability: the original forests occupy only 2% of the country area. They are depleted to provide fuel for cooking, heating, construction, etc. Despite limited contributions to the global CO_2 output, demand for energy and transport are growing as lifestyles are changing.

Urbanization is an opportunity to drive economic growth and innovative change in sustainable energy consumption patterns, to pave the road for a progressive shift towards a low emission development.

Associations of qualified artisans in districts 5, 7 and 8 of Kabul

SHTA

Solar **H**ouse **T**echnicians **A**ssociation

Contact them!

Head of Association and responsible for district 8 office:

Tawakal Ulgaq *son of* Mohd Sediq, 0799739557- 0785688053

Responsible for district 7 office:

Haji Esmail *son of* Haji Eqbal, 0779952945 - 0799423249 and
Mohmand *son of* Char Gul, 0799423249

Responsible for district 5 office:

Parwiz *son of* Mira Jan, 0799637155

Many thanks to

GERES team in Kabul
Especially
The project managers
Research and Development department
Awareness and Communication department
Community Transfer department
Monitoring and Evaluation department
Administrative and Logistics department
The drivers, the cook, the cleaners, the guards

All the partners in Kabul, in Afghanistan, and in the world
Especially
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Ministry of Energy and Water
Kabul Municipality and districts' authorities
Wakils and Shura members from districts 5, 7 and 8 of Kabul
GERES team in Tajikistan
GERES experts
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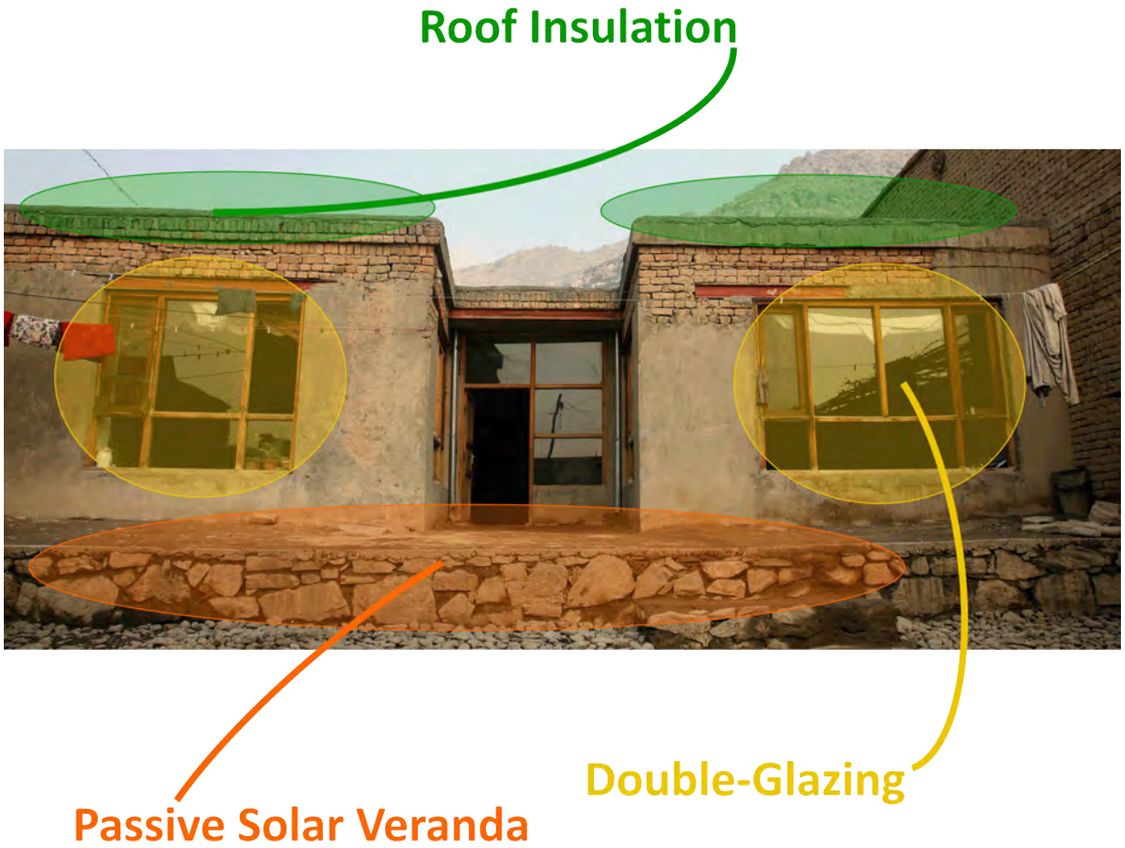

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