FINAL EVALUATION REPORT

Passive Solar Houses in Afghanistan

(Energy as a key factor of local economic development and poverty reduction to improve living conditions in Afghanistan and Tajikistan.)

Compiled by Rory Robertshaw

for

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CONTENTS

ACRONYMS

AFD – Agence Française de Développement

AFN – Afghanis (currency)

DAC – Development Assistance Committee

OECD – The Organisation for Economic Co-operation and Development

PSH – Passive Solar House

SEADEP - Socio-Economic Assessment of Domestic Energy Practices

SME – Small and Medium Enterprise

SHTA – Solar House Technicians Association

US-EPA – United States Environmental Protection Agency

WHO – World Health Organisation

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1. SUMMARY

In summary, the following conclusions are drawn from the body of the main report.

1.1 Overall Summative Conclusion

The project has performing excellently across the majority of the five themes of the evaluation: relevance, effectiveness, efficiency, impact and sustainability. The project is having a tangible impact on the environment, on fuel poverty and poverty in general with these outcomes being driven by a strong technical PSH products that offers proven energy-efficiency gains. Moreover, the project has delivered against an ambitious programme winning the respect of local communities, civil society organisations and a wide range of stakeholders

1.2 Overall Formative Recommendations

Looking forward, there are two main areas of focus. The first is a real need to continue with the work, the outcomes have been too substantial not to continue. Indeed, there are widespread calls from stakeholders for the project to continue, but at scale (Kabul as a whole or across Afghanistan). To do this however, Geres will need to further develop the emerging value chain, so that it is better able to stand on it own two feet, addressing critical question of sustainability bringing in a stronger normative aspects to the work.

1.3 Relevance

Analysis points to a highly relevant project with strong environmental benefits, which makes an important contribution to poverty reduction, whilst generating economic opportunities for artisans. These activities have taken place at a meaningful scale that contributes to local and national sustainable development agendas, both in terms of policy and practice, and which warrant wider replication.

1.4 Effectiveness

The project has made very good progress, fully executing the majority of its responsibilities and outputs as planned. Beyond this the project has been strongly effective on multiple fronts.

1.5 Efficiency

The project has delivered tangible outcomes and is having measureable impact. These outcomes are being delivered efficiently and to a scale that minimises unit costs in relation to the benefits derived.

1.6 Impact

The project is creating positive change on a number of levels. In fact, the project delivers beyond the immediate focus of the Project Document in as much as, in addition to delivering substantial benefits for the environment and making a clear contribution to the reduction in levels of household fuel poverty, the project is also stimulating improvements to health, education, the daily lives of women, social relations and household finances. In doing so, the project makes a direct contribution to the reduction of poverty for many vulnerable families.

1.7 Sustainability

Important progress has been made by the project to ensure sustainability, particularly in terms of the project's environmental and social aspects, however economic sustainability faces some challenges and it is unlikely that the market will function effectively in the short term without subsidising consumer demand for PSH. In addition, environmental sustainability can be secured more fully if a workable solution to the problem of plastic disposal is found. In terms of the

project's direct beneficiaries - those households with PSH - the economic, social and environmental gains are likely to remain for the life of the PSH. The evaluator has every confidence that Geres can meet existing sustainability challenges if a new phase for the project is secured.

1.8 Scoring Matrix

Using the rating system described in section 3.2, the following matrix provides a visual summary of performance of the project to date:

2. CONTEXT

2.1 Scope of Work

The following table provides a summary of the Geres led project undergoing final evaluation.

Project name	Energy as a key factor of local economic development and poverty reduction to improve living conditions in Afghanistan and Tajikistan.
Project duration	July 2012 – March 2015
Project budget	€1.4M
Project partners	SAB Kabul Municipality
Specific Objective	Combat poverty and natural resource degradation so as to improve the living conditions of the Afghan population, by fostering the widespread rollout of energy-saving technologies, appliances and practices through market mechanisms and support for private initiatives.
General Objectives	Support local economic development and employment through the creation or strengthening of micro-businesses in the housing and energy-saving sectors working with the general public. Develop and test energy-efficient techniques and appliances appropriate to the urban environment in Afghanistan, local practices, users and the investment capacity of even the most vulnerable communities and roll these out widely. Participate in the fight against climate change by promoting innovative mitigation measures, as well as raising the awareness of civil society and institutional stakeholders.

At the time of the evaluation, the project had two months to run before completion. As such, the project was substantially compete allowing for the early assessment of the impact and sustainability as well as looking back at progress made over the last three years against plan.

The evaluation report has been prepared after study of project documentation, a period of field assessment and subsequent analysis of data generated including two surveys (190 direct beneficiaries, 247 indirect beneficiaries) and 5 focus groups. The report has been drafted according to the prescriptions of the contractual agreement.

Specifically the evaluation was expected to focus on the flowing six criteria:

1. Relevance: Capacity of the project to answer to the needs and expectations of beneficiaries

and target groups, as well as development issues faced by the country, according to initial objectives and issues to be addressed.
2. Effectiveness: Measure and analysis of achievements (and variations) of the project in comparison with logical framework, taking into account potential unplanned positive and/or negative effects.
3. Efficiency: Comparison of implementation means and their cost, with the related achievements, in order to highlight an optimal or sub-optimal use of financial resources of the project.
4. Impact: Assessment of project impacts on target groups and final beneficiaries, with an analysis of potential long-term effects.
5. Sustainability: Identification of the leverages of sustainability created by the project.
6. Coherence/Complementarity: Study of coherence and complementarity of the project with other actions.

3. METHODS

3.1 Approach

Adhering to the DAC[1] quality standards for evaluation, the evaluation was mindful of practical issues relating to access to respondents; theoretical issues relating to value chain development; and ethical issues arising from the identified methodology including confidentiality. The evaluator strove to ensure that the work undertaken meets best practice in terms of empowerment and accountability for evaluation work, placing emphasis on sharing information and learning, and being ethical, open and transparent.

A mixed evaluation methodology was applied in order to strike a balance between reliability, validity and representativeness. Evidence, as far as is possible, was triangulated by testing with multiple respondents using differentiated techniques so as to develop broadly supported findings or areas of the programme that are contested or viewed differently.

The evaluation balanced summative findings with formative observations in order to provide clear ideas for programme improvement and in particular innovations and lessons learned that could support scalability, replication, governance and sustainability.

3.2 Data

The primary sources of data were gathered from:

1. Project documentation, databases and reports, including information supplied by Geres, project partners and stakeholders (please refer to **Annex A**).
2. Relevant Government of Afghanistan and international agency data, policy and reports.
3. Facilitation of a self-assessment workshop with project officers.
4. Quantitative survey of Direct Project Beneficiaries (those households entering into PSH contracts), including households that cancelled PSH contracts – see **Annex D.**
5. Quantitative survey of Indirect Beneficiaries – (residents of Kabul Districts 5,7&8)- see **Annex E.**
6. Focus groups and structured interviews with (– see **Annex C)**:
   - Wakils/ demonstration houses/focal points/Shuras/committees
   - Artisans/ SMEs/ Craftsmen/Business (PSH) Associations
7. Structured interviews with (– see **Annex B)**:
   - Project partners
   - Stakeholders
   - Project team members

[1] The DAC Quality Standards for Development Evaluation, produced by the OECD, provides a guide to good practice in development evaluation. They are intended to improve the quality of evaluation processes and products and to facilitate collaboration. Built through international consensus, the Standards outline the key quality dimensions for each phase of a typical evaluation process: defining purpose, planning, designing, implementing, reporting, and learning from and using evaluation results.

http://www.oecd.org/development/evaluation/qualitystandards.pdf

3.3 Questioning

The terms of reference provided a series of questions to help explore the evaluation themes of relevance, effectiveness, efficiency, impact and sustainability as set out in **Annex F**. The questions formed part of an evaluation matrix (see table below) that cross-referenced the evaluation criteria with 3 aspects of value chain analysis:

- PSH product development and raw material supply
- PSH SMEs (construction and business support)
- market access and market development.

It should be noted that these three aspects of the PSH supply chain map closely to the project's three general objectives.

Elements/ Outcomes	Relevance	Effective-ness	Efficiency	Impact	Sustain-ability
PSH Product and material supply (Objective 1)					
Construction and business support (Objective 2)					
Market access and market development (Objective 3)					

4. FINDINGS

4.0 Rating Performance

To support the process of synthesising judgements from the analysis and findings, a visual representation of project performance for each elements of the evaluation matrix has been developed using the RAG (red, amber, green) rating system. When applying this system, performance ratings have been colour coded using the descriptors detailed in the table below. As much as the RAG rating system presents a useful visual summary, priority should nevertheless be given to the detailed narrative descriptions of performance that have been used to determine the rag rating.

Green	Green Amber	Amber	Red Amber	Red
Performed Strongly	Performed Substantially	Performed Satisfactorily	Performed Weakly	Failed to Perform
The project has fully performed/delivered full results	The project has substantially performed/delivered substantial results	The project has satisfactorily performed/delivered satisfactory results	The project has performed weakly/delivered weak results	The project has not performed/not delivered results

4.2 Presentation of Findings

In the following sub-sections findings are presented according to the structure provided by the evaluation matrix described above and in section 3.3.

Please note that where graphs are provided with survey question summaries below them in italics – these are paraphrased from the actually questions asked during the survey. The actual questions can be seen in the accompanying annexes.

4.1 RELEVANCE

Relevance *– the extent to which the objectives of the project are consistent with the target group's priorities and the recipient and donors' policies.*

4.1.1 Project Objectives

The project's Specific Objective is to:

> *combat* ***poverty*** *and* ***natural resource degradation*** *to* ***improve the living conditions*** *of the Afghan population, by fostering the widespread rollout of* ***energy-saving*** *technologies, appliances and practices through* ***market mechanisms*** *and support for* ***private initiatives****.*

The highlight of key text in bold is to emphasise the triple intentions of the project, that is to:

1. Reduce poverty
2. To support local economic development
3. To protect the environment

To achieve these objectives, the project focuses on 3 target groups:

1) *Artisanal businesses – to build and maintain PSH packages.*
2) *Neighbourhoods/communities in Kabul districts 5,7&8 – to provide local governance arrangements*
3) *Individual households within Kabul district 5,7&8 – as the project's direct beneficiaries, in particular poorer households.*

It is in the context of these objectives and target groups that assessment is made as to whether the project is consistent with the local Afghanistan context and development priorities. As such the following section draws out some of the related themes arising from the national policy debate, related economic and development priorities, and the broader objectives of the AFD development assistance programme.

4.1.2 Urban Context

Afghanistan remains a predominately rural society, with only a quarter of the population living in its cities. However, this is changing rapidly, as Afghanistan is currently undergoing the most intense period of urbanisation in its history, driven by a powerful mix of population growth (2.2%), rural urban migration and the influx of internally displaced people and returnees (notably from Pakistan and Iran). In the foreseeable future, UNDESA, estimates there will be an additional 320,000 inhabitants per year or 43,800 households for the foreseeable future. Moreover Kabul, the capital, is already the focus of urban growth accommodating 57% of the total urban population – a trend that is likely to continue.

Rapidly growing cities often have their share of problems with infrastructure and service provision lagging behind growth. This is certainly true of Afghanistan where 28% of the urban population live below the poverty line. Nevertheless, cities are also the drivers of development,

providing important opportunities and scale that can help address challenges of poverty, inequality, environmental degradation and conflict.

4.1.3 Governance

30 years of war and conflict have had an impact on Afghan institutions, not least systems of localised governance and with it capacity to support local populations. According to UNDP (Human Development Report, 2012) Afghanistan ranks among the lowest countries, 175th, reflecting simultaneously the challenges of poverty (36%), low participation of women in the workforce, and almost half of the country's children not accessing education. Likewise, systems of urban governance, in several respects, are still in their infancy. There is however a reasonable prospect of increased democratisation, accountability and a growing revenue base to address the substantial areas of the city which are unplanned and un-serviced. The development of community development councils liked to the existing system of neighbourhood and district committees (shura) provide an important mechanism for strengthening local governance, an aspect that the project has capitalised on and in turn is helping to develop.

4.1.4 Environment

For the time being, Afghanistan's economy is carbon-lite, only producing 0.3 metric tonnes of CO_2 per capita, amongst the lowest in the world. However, the country is faced with the prospect of increasing urbanisation and stable economic growth, which together are likely to drive new, more intensive, patterns of production and consumption – carbon dioxide emissions have already started to increase. The Ministry of Energy and Water is planning a considerable increase in domestic energy supply in the medium term with a strong focus on renewable sources. For the time being, although electricity and gas provision is increasing, the majority of households - poor households in particular - are dependant on coal and wood burning for household heating. It is estimated that 90% of cooking and heating fuels are solid biomass.

This important step towards greater reliance on renewable sources, needs to be met with equal effort to increase energy efficiency and the adoption of sustainable patterns of production and consumption. In this regard, the National Environmental Protection Agency (NEPA) is working towards incorporating principles of sustainable development in policy and practice, but this is not to underestimate the enormous challenges this presents. By way of illustration, today only 2% of the country is covered by forest this level being sustained by a programme funded by international donors to plant new trees. However the demand for word based fuels for heating and cooking are likely only to increase in the medium term, creating environmental damage and the prospect of increasing fuel costs and fuel poverty.

Partially linked to the use of carbon-based fuels, the World Health Organisation's Ambient Air Pollution in Cities Database (2014) indicates that Kabul has some of the highest levels of harmful fine particulate matter in its outdoor air. Of over 1600 cities listed on the data base Kabul ranks in the top 10 cities for PM10 pollutants, registering 260 ug/m3. Kabul also ranks in the top 20 for the finer, more dangerous, PM 2.5 particles with 86 ug/m3. Revised WHO (2012) estimates suggest 1 in 8 global deaths, double previous estimates, are attributable to air pollution exposure, making this the world's largest single environmental health risk.

Furthermore, the link between energy needs and poverty are important to consider. Since energy totals almost a fifth of household expenses in the project's target districts and where income per household member is less than $1 per day, fuel poverty is therefore common. The SEADEP survey reporting that, on average, target district households carry $778 of fuel related debt.

4.1.5 Economic Development

There is a lack of reliable data regarding Afghanistan's current and future economic prospects, but it is fair to say the economy is weak following years of conflict and the resulting lack of security required as a pre-requisite for sustainable investment. The UN system estimates a national jobless rate of 32 per cent. Education is not well adapted to market needs and opportunities. In addition, there is evidence of exploitative employment conditions linked to high levels of household indebtedness. The UN identifies four key challenges inhibiting employment and economic growth:

1. lack of an enabling environment
2. lack of support services, including key infrastructure, and market access
3. lack of access to capital and financial services
4. lack of advanced entrepreneurial skills, knowledge and technology.

4.1.6 Relevance Findings

From the brief discussion above, at the broadest level it can be seen that the project's objectives resonate well with national priorities and policy. However, it is worth stating that the three project intentions are not necessarily mutually supportive in the Afghanistan context and the specificity of the value chains supporting PSH[2] production and demand.

For example, a focus on environmental impact might stress the need for maximum market penetration of PSH requiring, in a price sensitive market, a strategy to push down input costs to the detriment in particular of labour employed in production – i.e. artisans and the profitability and potential viability of their businesses; or by sourcing input supplies solely on a cost basis without due consideration of the differential environmental impact of input materials, their provenance and sustainability of use.

Alternatively, a poverty reduction model might focus attention on maximising the subsidies available to poor households with the risk that this distorts market provision and the longer-term sustainability of SMEs accessing the market.

Lastly, an economic development model might focus attention on developing sustainable market mechanisms, in doing so focussing effort on marketing and distributing PSH packages to the segments of the market most able to afford them, in doing so excluding the most vulnerable and the poorest.

The intention here is not to overstate these potential tensions, but rather to illustrate the complexity of the project proposition and the need for a pragmatic approach to evaluation that considers these various intentions as a whole rather than as being discrete and unconnected. As such we have consider the degree to which the project has considered and responded to these tensions, assessing the degree to which the project has taken conscious decisions to steer the project in a specific direction and in turn considering whether this was appropriate and effective.

Subsequent sections of this report will illustrate that the project has steered an effective pathway, but in doing so has needed to make sensible compromise or at least setting a particular balance between these equally valid sets of needs. The environmental case of PSH is increasingly tangible and is discussed in more detail in section 4.2, delivering substantial improvements to household energy efficiency and as such reducing winter requirements for wood and coal. In terms of poverty alleviation the project demonstrates a number of important advances. Firstly, reduced winter fuel use creates an important household saving in the context

[2] PSH – Passive Solar House – a house that is designed to collect, store, and distribute solar energy in the form of heat in the winter. Likewise in the summer a PSH reduces heat gains. It is passive as in the sense that it does not require the use of mechanical and electrical devices. See Annex G for some examples.

of high levels of fuel poverty in which the purchase of winter fuel reserves accounts of a significant proportion of the household budget. It is worth noting here that Kabul experiences extreme thermal amplitude, in which very severe winters go hand in hand with long periods of direct daily winter sunshine – ideally suited for a variety of PSH packages. Moreover, there is a growing evidence base that, in addition, the PSH and 'Verandas' in particular, offer a number of other important impacts that have a bearing on poverty. These are discussed in more detail through the report, and include the potential of:

- improved health outcomes
- improved education outcomes
- improved living conditions
- improved social relations
- specific benefits for women and children.

However, the poverty reduction aspect of the project has in part been diluted by the need to ensure progress towards a market-based mechanism. This has meant that the subsidy provided, to drive up initial demand and target poorer households has been reduced, with the risk that the poorest households will not be able to afford full PSH packages. In addition, the project has not targeted the poorest households in a systematic way other than by working in unplanned neighbourhoods including some of the more vulnerable hillside residents. Part of the reason for this is that the cost and complexity of, as well as capacity needed to, establishing a transparent and accountable means-tested system acts as a barrier. In addition, to target this group in such a way would increase unit costs making the target of number of PSH houses to be delivered untenable.

The economic development outcomes are achieved though the establishment of a new PSH related value chain, and although benefiting input suppliers the project has focused particularly on supporting small-scale artisans to develop the required capacities to service the market working along side Geres, but also with the potential to work more independently in the future. In doing so, Geres has made a clear decision not to focus on larger, more established business units, and as is discussed later (see section 4.6), this is a strategy that appears to be appropriate at this point in the continuing development of a PSH value chain.

The working methods employed by Geres in achieving the above have been anchored in a real commitment to working closely with local communities through local systems of governance. To illustrate this, the project has successfully delivered to planned scale, with 2,727[3] PSH packages delivered, and has achieved this sizable challenge, not through arms length above-the-line advertising but through a dissemination programme in which community endorsements, demonstrations, discussion and word-of-mouth recommendations has driven demand. This approach translates to strong local ownership and can be seen by the direct contribution of local communities to the roll out of PSH (€400,000+).

Finally and importantly, the project is meeting the expectations of stakeholders and is well supported and backed by international agencies, key ministries and local level organisations such as the Kabul Municipality and local system of shura committees. Levels of support, trust, and satisfaction are high. The only substantial criticism offered was that the project was limited in its geographic scope and should be extended across Kabul or on a national level. Evidence of this is presented in subsequent sections of the report along side data indicating strong acceptance and demand for PSH from beneficiary communities. This supports the notion that PSH packages are both well adapted to local conditions and needs as well as their being effective.

[3] As of 31 January 2015 – that is to say before then Project end day in March.

4.1.7 Relevance Summary

Overall Conclusion

In summary, this brief analysis points to a highly relevant project with strong environmental benefits, that makes an important contribution to poverty reduction, whilst generating economic opportunities for artisans. These activities have taken place at a meaningful scale that contributes to local and national sustainable development agendas, both in terms of policy and practice, and which warrant wider replication.

Themes	Relevance
PSH products and material supply (Objective 2)	
Construction and business support (Objective 1)	
Market access and market development (Objective 3)	

On this basis the evaluator, using the RAG rating system, considers relevance to be Green– on the basis that the project, working on multiple fronts, is fully relevant.

4.2 EFFECTIVENESS

Progress – *the extent to which planned project activities and outputs are being delivered.*
Effectiveness -*a measure of the extent to which a project attains its objectives.*

4.2.1 Activity Progress

The Project Document details project activities intended to deliver a set of measurable results and in turn contribute to the general objectives. This section of the report records progress made in implementing these. Groups of activities are arranged in Results Areas in the series of tables below, with the evaluator's findings recorded below each set. It should be noted that project indicators have not necessarily been listed against the General Objective and Results Area to which they are allocated within the logframe – this has been done to support a more coherent analysis.

4.2.1.1 Activity Progress: Results Associated with Objective 1

- Support local economic development and employment through the creation or strengthening of micro-businesses in the housing and energy-saving sectors working with the general public.

Results Area 1.: Identification and support to the artisan sector Indicators: • 60 PSH enterprises • 25 stove enterprises

For PSH enterprise, Geres has met the target by following an elaborate and extensive selection process design to identify committed artisanal entrepreneurs with the minimum levels of skills and experience required. Approximately 60% of identified artisans were selected to take part in the programme. Criteria included:

- years of experience
- access to workshop facilities
- literacy
- number of employees
- investment in company
- neighbourhood links
- availability for training
- level of interest
- technical knowledge
- quality of work
- business reputation.

In total the project selected 53 businesses with an average of 15.7 years of experience and employing on average 3.7 craftsmen. Of the 53 selected, 51 went on to be trained. It should also be noted that SME are fluid in their organisation and alliances and are subject to regrouping. As it stands currently the same 53 businesses have reformed as 60 separate businesses.

The project's stoves remain in a research and development stage with energy-efficiency characteristics of the latest prototype being measured over the current winter period. As such, Geres has not initiated the processes of identifying, training and supporting businesses for production. During the design and piloting stages, Geres has worked with two local Master Craftsmen, working closely with the team during the design and fabrication of pilot stoves.

Results Area 2.: Reinforcement of business
Indicators:
- Business plans

Training was led by SAB using a train the trainer (project team members) approach. As such SAB was responsible, although supported and guided by Geres, for developing training methodologies, materials and monitoring. In total, 1 pilot and 4 main training sessions were run, accommodating 74 artisans from 53/60 SMEs.

The training itself, although supported by critical theoretical input, was highly practical. Main training took around 22 days, comprising 8 days of theoretical work and 14 days of practical experience. Technical skills were applied in practice in the construction of demonstration passive solar houses. Training was disaggregated by trade (carpenters, metalworkers, etc.) and by product (wooden framed PSH, metal framed, etc.). Complementary training was also undertaken for aspects such as business planning, summer veranda use, insulation and double-glazing. For weaker artisans opportunities to serve as apprentices to Master Craftsmen were organised and supported.

Training covered a number of key components including:

- materials and tools
- pricing and costing
- PSH design and applications
- customer service
- marketing and business planning
- energy efficiency and the environment.

Results Area 3.: Business sustainability
Indicators:
- 2 business associations

Following focus group research, the project helped the establishment of the Solar House Technicians Association (SHTA). Working at Kabul level, the association was initially registered with 25 members, but organised into three district offices. New members have joined the association since its establishment.

Training was offered at office level and included:

- administration and organisation
- awareness and communication
- technical discussions about quality and improvements
- business development including:
  - cash-flow management
  - customer follow-up.

4.2.1.2 Activity Progress: Results Associated with Objective 2

- Develop and test energy-efficient techniques and appliances appropriate to the urban environment in Afghanistan, local practices, users and the investment capacity of even the most vulnerable communities and roll these out widely.

Results Area 1.: Research and development
Indicators:
- 5 tested techniques/equipment
- 1 Passive shelter

Geres has experimented on a range of energy saving techniques building on previous project experience including a PSH initiative in Banyam province, Afghanistan. Geres has focused on PSH packages, in part driven by their success in the field, but also because of slower progress made in adapting stove technologies for the Afghanistan context. In regard to this latter aspect, the project is testing the 15th iteration of an adapted stove, which although having a number of redeemable characteristics, is some way off being ready for dissemination.

PSH packages have undergone a series of improvements and adaptations in comparison with the structures, materials and methods used. The veranda range offered by Geres is increasingly differentiated to suit market needs. For example, veranda frames can be built using local poled wood, imported sawn timbers or fabricated metal. Coverings range from light to heavy plastic, polycarbonate and glass with simple ventilation or more complex double-glazed windows. Verandas can be combined with insulation of the house itself including roof insulation, double-glazing or full insulation including both. Insulation is also offered as a stand-alone package – particularly in the final year of the project including those houses that do not meet the specific requirements of verandas.

Structural design of PSH has also improved; verandas are now more easily fixed to the existing housing envelope without the need to undertake remedial works to the roof. This along with other innovations has reduced construction time from days to hours. Templates for veranda construction work with traditional U-shared houses and flat fronted houses. Verandas are readily adjusted for building length and height. Geres have also successfully constructed verandas above ground floor, on hillside properties and within densely built unplanned areas.

Even with the restrictions of having to building on south facing properties unencumbered by surrounding buildings and with a sufficiently stable front porch or terrace, the SEADEP survey estimates that as much as 76% of housing stock in Kabul meets the basic required for veranda provision ,with many more being eligible for stand alone insulation packages.

Results Area 2.: Demonstration
Indicators:
- 90,000 informed people
- 120 demonstration sites
- 30 stove demonstration sites
- Intervention mapping

Demonstration houses – houses in which PSH has been provided free on condition that the household agrees to support awareness raising events and allows public access to view the installation – have been erected across the target districts, 133 in total. Typically more than one demonstration house was built in each targeted neighbourhood. The majority are located on private property, along with a number on public sites such as clinics and mosques. Contractual rules and strict criteria governed the provision of demonstration houses.

The provision of demonstration houses was mapped using Google Earth. The images indicate widespread dispersion of houses across the three target districts, across planned and unplanned areas, hillside developments, as well as in central and dispersed locations.

As noted above, stoves remain in a development stage and as such full-scale demonstration activities have not been embarked on, although 20 households of district 5&7 are equipped with improved stoves for monitoring of fuel, temperature and social acceptance (including feedbacks from the relatives).

Results Area 3.: Dissemination and awareness raising
Indicators:
- 9500 interest expressions
- 7 organised events
- 1 Communication plan
- 1 Catalogue of products
- 2,880 PSH packages

Marketing and awareness raising activities have been a strong focus of the project, using below-the-line methods to raise awareness of PSH, artisans and the project as a whole. Over the three-year period Geres has held a total of 2,285 meetings attended by 7,178 people of whom 75% were women. In addition, the project distributed in excess of 10,000 awareness raising materials including brochures and posters. Greater attention was given to District 5 than Districts 7 and 8 in terms of meetings held and the distribution of marketing materials.

Excluding PSH contract source directly by SMEs outside of the project area (districts 5,7 and 8), the SME had delivered, at the time of the evaluation field visit, 2,727 PSH packages – close to the stretching project target. Of these, more than 2,150 included the provision of verandas (see table below).

PSH Package[4]	PSH Contracts
Full Double-Glazing	336
Full Insulation	5
Garm Khona	346
Garm Khona +	1810
Roof Insulation	230
Grand Total	**2,727**

4.2.1.3 Activity Progress: Results Associated with Objective 3

- Participate in the fight against climate change by promoting innovative mitigation measures, as well as raising the awareness of civil society and institutional stakeholders.

[4] Gram Khona is the term used locally for a house fitted with a veranda.
Gram Khona + is the term used locally for a house fitted with a veranda with additional double-glazing.
Double-glazing of all the windows in the living room.
Full insulation refers to a package that includes both double-glazing and roof insulation.
See Annex G for some examples.

Results Area 1.: Monitoring and evaluation
Indicators:
- Baseline
- Winter monitoring report

Geres' has demonstrated a strong commitment to ensuring a robust evidence-base for their practice. A bespoke monitoring and evaluation system is fully integrated within the project; it stands as the foundation of Geres work and approach. The project design completed a SEADEP baseline study and the Winter Monitoring Report that quantifies energy savings of PSH packages. Both studies are of high quality and are readily acknowledged by the evaluator.

Results Area 2.: Information and coordination
Indicators:
- Carbon finance mechanism

Geres developed and followed a comprehensive monitoring system to meet the exacting standards of carbon-financing schemes, however, the results of the Winter Monitoring Report, although demonstrating substantial energy saving, conclude that the project's PSH packages were not viable for a carbon-financing approach. In essence the costs of monitoring outweighed the value that could be derived from the current global value of carbon credits. On this basis Geres have not pursued carbon financing past the study phase. This outcome had some broader impact on the project as carbon credits had been factored as a component of project income (approx. €300,000). To offset the effective reduction in budget, in the third year of activity, the project rapidly scaled down subsidies for verandas while increasing provision of standalone insulation and double-glazing products.

4.2.2 Progress summary

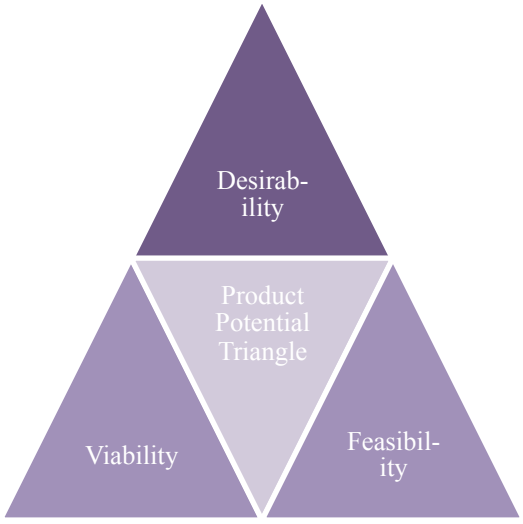
In summary, the project made good progress against a broad range of planned activities, in doing so approaching or meeting ambitious targets. However progress made toward the dissemination of energy-efficient stoves has been slow. Carbon financing has been fully explored, but is not viable in the current context.

4.2.3 Effectiveness

Having made good progress the question arises as to whether this will lead to the attainment of objectives – that is to say, it will be effective.

The evaluator has considered three, project-specific, prerequisites for achieving effectiveness, if not met the project cannot consider itself to have been effective. These are acid-tests for value chain effectiveness and are drawn out of a consideration of the product viability triangle depicted below.

The tests are as are as follows:



1. Desirability - a good quality, environmentally beneficial product at a competitive price.

The PSH packages offered to the market need to meet minimum quality standards. As a starting point the product must at least meet minimum levels of energy efficiency. This requirement provides obvious benefit to the end consumer, but equally important, it is the basis on which the environmental benefits of the project is predicated.

Secondly the market requires adherence to a number of other quality criteria, such as:

- safe
- functional, space creating
- easily and cheaply maintained
- legal

- aesthetically pleasing
- durable
- clean and hygienic

Thirdly the market is price sensitive, so affordability is a critical determinant for market penetration; indeed affordability should also be seen as relative to the saving arising from energy-efficiency.

2.Feasible technology for local PSH production using locally sourced or available inputs.

The technology solution being applied in Afghanistan needs to be feasible for the context. There are several considerations in this regard. For example, the cost of technology needs to be proportionate to planned output. The availability of suitable technology in turn needs to be met with the development of the necessary technical and operating skills within the local labour market in order to use, service and maintain equipment.

3. A network of viable producers or a strong, single, lead-catalyst producer.

Value chain theory and practice suggests this can take the form of a network of smaller producers, with the benefit of increased competition and/or collaboration. Or through a dominant, often vertically integrated lead producer that has the benefit of access to capital and production scale.

Capital investment in PSH production needs to be commensurate with the profitability of the business to justify investment.

It should also be said that value chain projects are most likely to be successful if they build upon an emerging value chain, rather than trying to implement something from nothing.

The following section therefore assesses effectives in the context of the three acid tests described about.

4.2.3.1 Effectiveness: Results Associated with Objective 1

Results Area 1.: Identification and support to the artisan sector

Through its comprehensive SME selection process, Geres has specifically targeted, in-line with the intentions of the Project Document, micro-businesses. Larger more sophisticated businesses have been excluded, as have some weaker mirco-businesses. The sustainability section considers whether an alternative or emerging strategy for scaling-up the project's work could benefit from the inclusion of larger businesses, however in the context of establishing a new PSH value chain, in a cost effective manner, the micro-business approach has been a clear success. On the assumption that micro-businesses are more likely to use labour than machinery in fabricating and fitting PSH, it is also assumed that Geres' strategy has maximised employment opportunities.

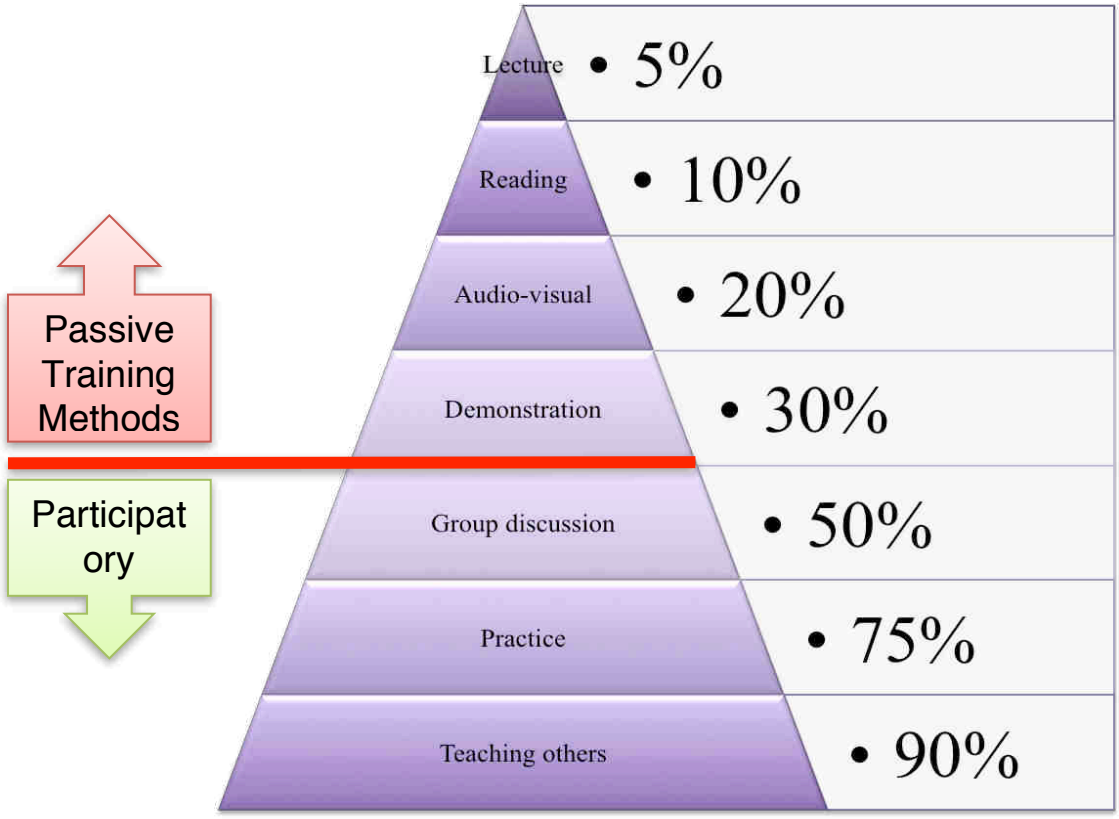
Subsequent sections highlight the success the selected SMEs have had in the following area:

- commitment to the project
- ability to apply learning in practice
- engagement of the majority of trained businesses in the delivery of multiple PSH contracts.
- raising awareness of PSH and encouraging customers in the decision to proceed with PSH installation
- meeting Geres' standards for PSH design
- meeting exacting quality standards for fabrication and instillation
- generating high levels of general customer satisfaction including an acknowledgement of product quality
- meeting Geres' standards for PSH pricing and costing
- securing on-going maintenance contracts
- securing contracts outside of the target districts (not supported by subsidies).

Results Area 2.: Reinforcement of business
Indicators:
- 80% skills acquisition

In assessing performance against the notion of an 80% skills acquisition the evaluator has assumed the measure relates to the notion of core skills required to market and construct PSH, that is to say the core skills required to run a functional business.

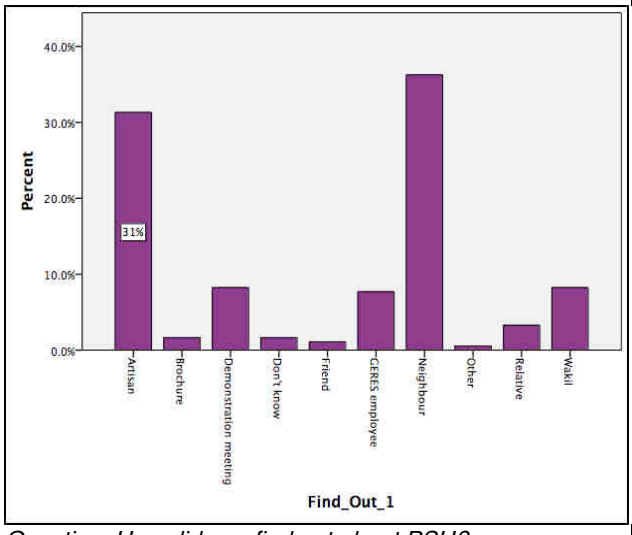
The evaluator was not able to observe training sessions as these were complete. However, the evaluator through an assessment of the dissemination data-base, training materials and reports, quantitative questionnaires and focus group discussions was nevertheless able to make judgement as to the quality of training and related business support.



The evaluator identified:

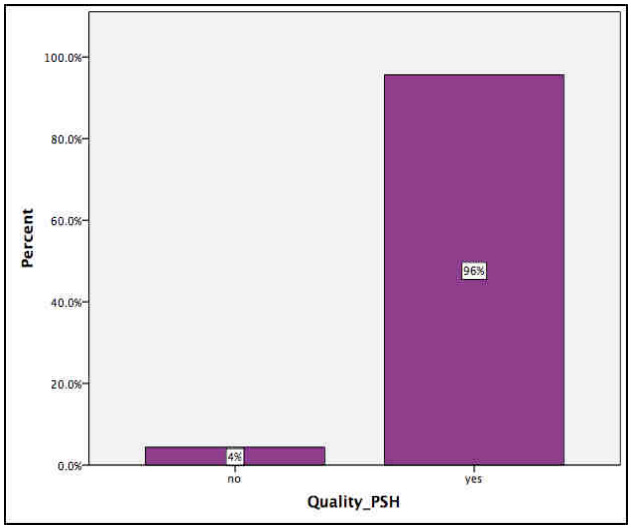
- well structured and executed training
- effective, detailed and contextualised training content
- good training attendance and completion rates
- maximisation of knowledge retention through the consistent use of participatory techniques (see diagram above) – the training was highly practical and experiential
- clear and consistent examples of the application of knowledge by trainees (artisans) in the provision of PSH
- clear and consistent examples of the application of knowledge by trainees (artisans) in their wider business environment
- high levels of satisfaction regarding training methods and contents among focus group participants
- on-going, long term field support and monitoring by Geres that targeted the quality of artisanal PSH production
- high levels of customer satisfaction regarding the quality of PSH.
- high levels of satisfaction of customers with the quality of PSH- 96% positive (see graph below)
- evidence of repeat/referral business for trained artisans including maintenance work – an average of 59 completed contracts per SME.
- 31% of the customers received the information from the artisans themselves (see graph below).

Graph 1: Finding out about PSH.



Question: How did you find out about PSH?

Graph 2: PSH Quality.



Question: Are you happy with the Quality of your PSH?

In summary the evaluator found the quality of training and support to be of a high standard, with strong evidence of its effectiveness.

Results Area 3.: Business sustainability

Indicators:

- 80% autonomous businesses
- 20% yearly business activity increase
- €1,250 cumulative benefit (5 years) – per SME

Business sustainability including business autonomy is discussed in more detail in the sustainability section of the report.

Following training, intensive follow-up support was provided to participating SMEs. Of the trained SMES, a high proportion (46 or approximately 75% of trained SMEs) were responsible for the of delivery 2,727 PSH packages (roughly 60 each, with a minimum of 1 contract and a maximum of 302). As a result SMEs generated fees (excluding materials costs) of €118K or €43 per PSH package. As such the average earning of SMEs through direct project activity over a three year period was in excess of €2,500 each – this being double the project target (€1,250) set for five years (see following table).

The picture regarding yearly business activity increases is more complex. The performance of SME for the time being is closely related to Geres policy decisions, such as which neighbourhoods are being targeted, subsidy levels and which packages are being promoted. For example, for SMEs that traded both in project year 1 and project year 2, they experienced a 69% increase in fee income albeit that subsidies were dropping during this period. Alternatively, for SMEs that traded both in project year 2 and project year 3 - bearing in mind that year 3 still has a short period to run - fee income is down by 1/7th, primarily as a result of a focus on promoting PSH packages without verandas. Aside from Geres related income, SMEs also maintain their original business activities, meaning that a decrease in PSH production does not necessarily mean a decrease in overall business activity. The long-term impact on SME income levels would be a more revealing measure, particularly should market forces play a greater role in determining levels of business activity in the future.

SME Ref	PSH Contracts	Average of labour cost (AFN)	Sum of labour cost (AFN)	Sum of labour cost (€)
SME01	302	3,173	958,150	14,741
SME02	2	3,350	6,700	103
SME03	143	2,363	337,950	5,199
SME06	9	2,700	24,300	374
SME08	11	3,127	34,400	529
SME09	267	2,988	797,800	12,274
SME10	94	3,174	298,400	4,591
SME11	7	3,321	23,250	358
SME12	134	2,643	354,100	5,448
SME14	3	3,367	10,100	155
SME15	144	3,227	464,700	7,149
SME16	15	3,333	50,000	769
SME18	7	3,357	23,500	362
SME19	8	3,375	27,000	415
SME20	71	2,630	186,700	2,872
SME21	17	2,929	49,800	766
SME23	114	2,243	255,750	3,935
SME24	209	3,383	707,150	10,879
SME25	1	3,400	3,400	52
SME26	3	3,300	9,900	152
SME27	98	3,023	296,250	4,558
SME28	3	3,800	11,400	175
SME29	10	4,071	40,712	626
SME31	1	3,400	3,400	52
SME32	2	3,500	7,000	108
SME34	10	3,820	38,200	588
SME35	9	3,933	35,400	545
SME36	19	3,558	67,600	1,040
SME38	201	2,350	472,300	7,266
SME39	164	2,079	340,900	5,245
SME40	20	2,775	55,500	854
SME41	4	3,438	13,750	212
SME42	198	2,109	417,650	6,425
SME43	26	2,881	74,900	1,152
SME45	3	3,567	10,700	165
SME46	1	3,000	3,000	46
SME49	5	3,160	15,800	243
SME51	69	3,310	228,400	3,514
SME52	15	3,080	46,200	711
SME53	46	2,996	137,800	2,120
SME54	166	3,234	536,800	8,258
SME55	1	2,600	2,600	40
SME56	37	1,841	68,100	1,048
SME57	3	3,567	10,700	165
SME59	20	1,500	30,000	462
SME60	33	2,508	82,750	1,273
(blank)	2	2,800	5,600	86
Grand Total	**2727**	**2,815**	**7,676,462**	**118,099**
		Average earnings per SME	€ 2,567	

4.2.3.2 Effectiveness: Results Associated with Objective 2

Results Area 1.: Research and development
Indicators:
- Fuel savings 50%

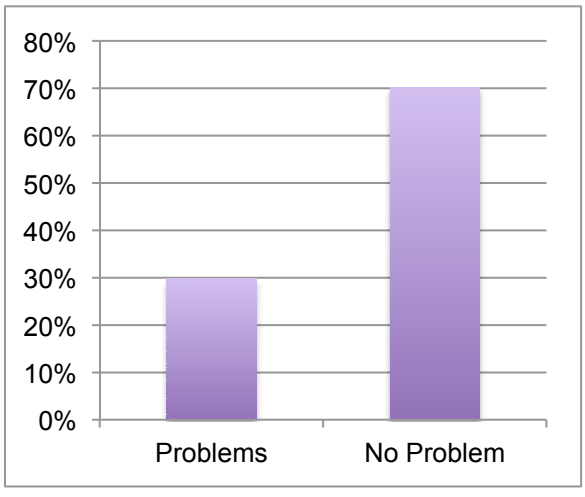
PSH packages
From a qualitative perspective, PSH and insulation packages have directly-stimulated market demand and their dissemination has been met with very high levels of satisfaction and perceived utility (see impact section). Satisfaction and utility are in turn driven by a number of specific product benefits which are led by, but are not limited to, energy-efficiency.

From a quantitative perspective, Geres has conducted comprehensive and robust research regarding the energy-efficiency of PSH packages. This research was conclusive and showed that:

- PSH uses significantly less energy than non–PSH, an average of annual energy consumption is reduced by 713 kWh corresponding to average energy savings of 21%.
- PSH supports higher (+1.50°C) indoor temperature than non-PSH - an average increase in temperature of 10%.

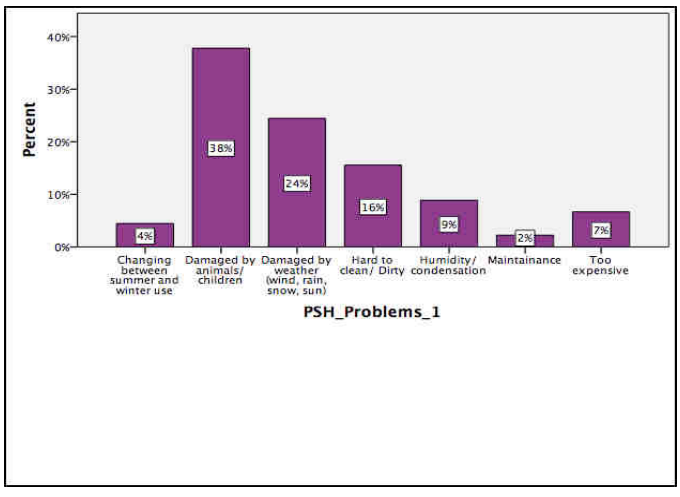
Moreover, as indicated above PSH packages were also seen to be of high quality by 96% of respondents to the direct beneficiaries survey and 70% of customers reported no problems with their PSH package.

Graph 3: Problems experienced with PSH.



Question: Did you have any problems with PSH?

Graph 4: Types of problems experienced with PSH.



Question: What problems did you have with PSH?

Where problems were encountered, they related to the areas depicted in the accompanying graph. Many of the listed issues, it is suggested, could be the focus of future design improvements. It should also be noted that no respondent mention that PSH had not been effective in reducing energy use or warming homes.

Stoves

Design iterations for an adapted energy-efficient stove has lagged behind broader market development. Increasingly, Afghanistan is being supplied with stoves imported from Turkey. Turkish stoves are typically of better quality and display better energy efficiency than the traditional stove manufactured by Afghan tinsmiths. Initially the project set out offer a substitute for the locally manufactured stoves, but has increasingly needed to increase design specification to meet the more exacting standards of the Turkish imports. Additionally, Turkish stoves are considered to be of a higher aesthetic/design quality. As such the Geres prototype stove in now in its 15th iteration and although having a number of promising characteristic, it is still some way from being market ready. Some of the stoves strengths and weaknesses are listed below:

Strengths

- Likely to out-perform traditional stoves in terms of energy efficiency, but not substantially
- Aesthetic design of v15, with aluminium casing should compete
- The estimated unit cost of v15 (8,000 AFN) is less than the average Turkish stove (+/-15,000 AFN)
- Thermal mass can be removed – facilitating the movement of the stove to new locations
- The Geres stove does not require the services of a mason/bricklayer to fit the stove
- v15 is relatively quick to make – 2 days per unit – this could be increase if manufacturing at scale.
- v15 does not require complicated tools to make other than a basic welding rig.
- The Geres stove is wood burning, unlike the Turkish stove which uses coal – coal is not recommended by the Government of Afghanistan
- The Geres stove appears to be less prone to cracking and has a longer life expectancy than domestically produced stoves
- The Geres stove is multi-functional and can be used for heating, cooking and backing – as such there is no need to purchase a separate tandoori oven for baking nan bread.

Weaknesses

- Still uncertain whether the Geres stove can meet the energy-efficiency of Turkish imports
- Aesthetic design of v15, is unlikely to meet the high levels of approval associated with Turkish stoves
- The estimated unit cost of v15 (8,000 AFN) is more than the average domestically produced stove (+/-2,000AFN)
- Geres stove making require welding skills, soared not suitable for manufacturing by existing tinsmiths, as such and will not tie into the existing value chain or benefit from existing customer relations, etc.
- Geres stoves are considered to take a long time to heat a room to the required temperature – this appears to be a consequence of the energy-efficient thermal mass, releasing energy slowly. This can be a problem for households who like to fire the stove for a short period of time in the morning to allow for washing, heating and cooking before leaving the house.

Results Area 2.: Demonstration

The project team had a clear sense of what characteristics and arrangements made for effective demonstration. This was a mixture of factors including:

- visible location
- prominent member of the community
- presence of a focal point (person) able and willing to promote PSH
- a charismatic owner/focal point
- clear commitment to allowing public access.

To test whether these characteristics had any bearing on actual PSH sales, the evaluator asked the marketing and awareness team to identify those demonstration houses that best met their criteria. This information was then used to compare PSH sales in the neighbourhoods benefiting from the presence of a strong demonstration house with those without. The result showed that for the 12% of demonstration houses which best met the Geres criteria, the neighbourhood in which they were located accounted for 24% of PSH sales – indeed suggesting that the identified characteristics of PSH demonstration houses did have a bearing on the level of dissemination.

It has not been possible to isolate the degree to which demonstrating houses had a direct influence on people's decision to install PSH, since responses from interviewees were not necessarily mutually exclusive. For example, respondents mentioned Wakils (local community leaders), brochures and neighbours and relatives each of which could be directly or indirectly linked to a meeting at a demonstration house. With this in mind, demonstration houses were nevertheless the third most mentioned means of finding out about PSH (8%) after artisans and neighbours (see graph in the following section).

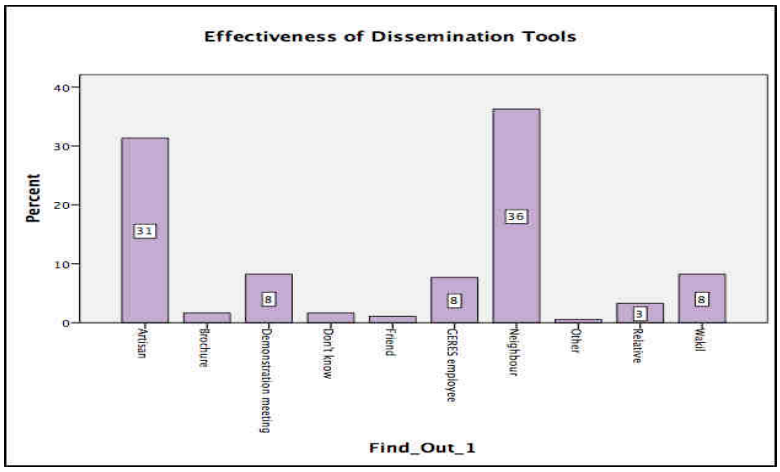
Results Area 3.: Dissemination and awareness raising

Indicators:

- €100 financial saving
- 5 year return on investment
- 30% subsidy

The direct beneficiaries survey indicates that the mean annual savings per household attributable to PSH totals 7,000 AFN or €108. When calculating this saving as a percentage of declared income, the average saving was to 6.6% of the annual household budget (see impact section).

Graph 5: Effectiveness of different Dissemination Tools.



When asked how recipients of PSH had first found out about PSH, artisans (31%) and neighbours (36%) were most often cited. This suggests that the project's strategy to support artisans in the marketing of PSH has been effective.

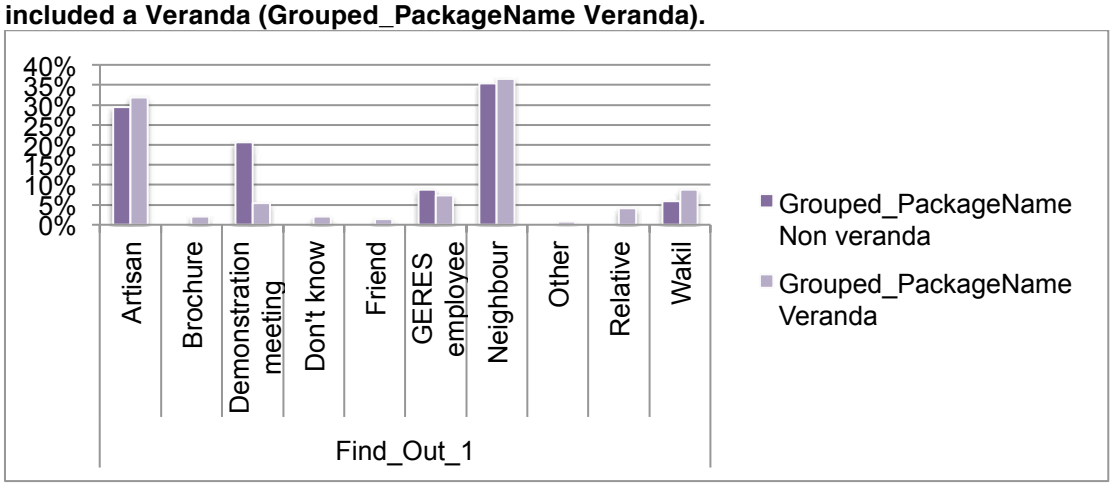
Question: How did you find out about PSH?

In addition, word of mouth has played an important role, in which case it can be assumed that dissemination techniques have spread beyond the immediate targeted audiences and that positive experience and testimonials regarding PSH have driven uptake.

Approximately 10% of PSH recipients also mentioned a second means though which they found out about PSH. This group mentioned posters as an additional means, suggesting that they were a useful secondary means to reinforce awareness and demand.

There was no statistical difference as to how people found out about PSH, whether they had received PSH with verandas compared to those who received double-glazing or insulation products only. The only exception here was that demonstration houses were more often mentioned by those who received verandas. This result appears to be consistence since demonstration houses are centred on showcasing the veranda (see graph below).

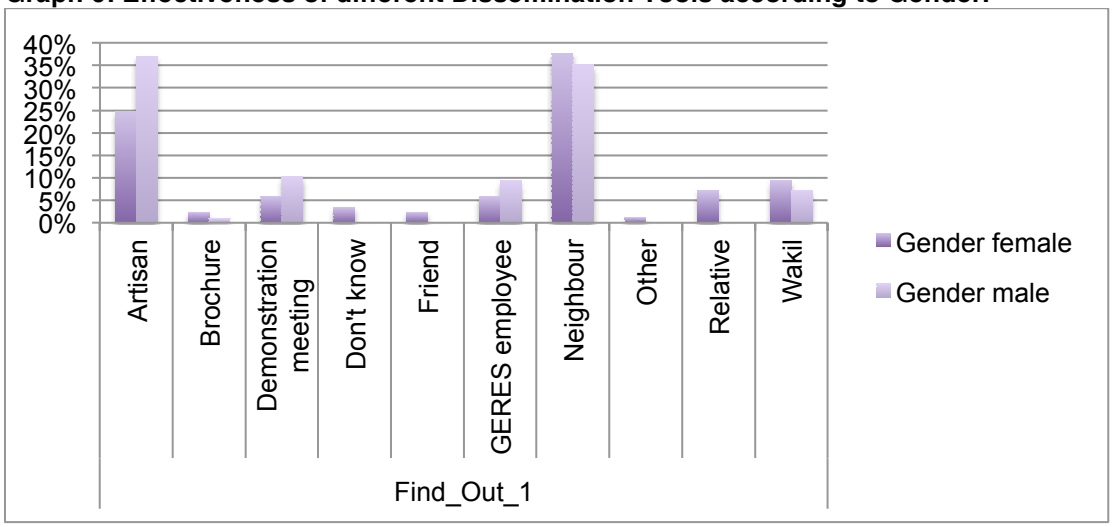
Graph 6: Effectiveness of different Dissemination Tools according to whether the PSH package included a Veranda (Grouped_PackageName Veranda).



Question: How did you find out about PSH?

There was no statistical difference in how people found out about PSH in terms of income levels, but gender was a significant factor (Fishers Exact Test, p=0.017)and suggesting a strong association (Cramer's V, ϕ_c=0.319). In this respect, men were more likely to hear about PSH via artisans than women, and women were more likely to hear about PSH through relatives and friends). These result no doubt reflect strongly gendered roles in Afghan society.

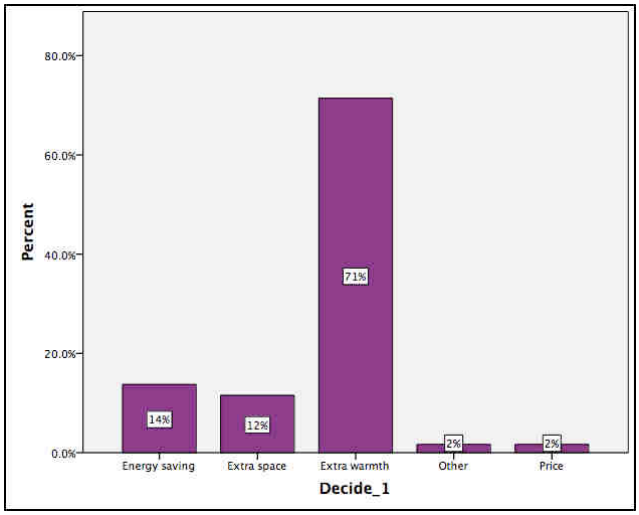
Graph 6: Effectiveness of different Dissemination Tools according to Gender.

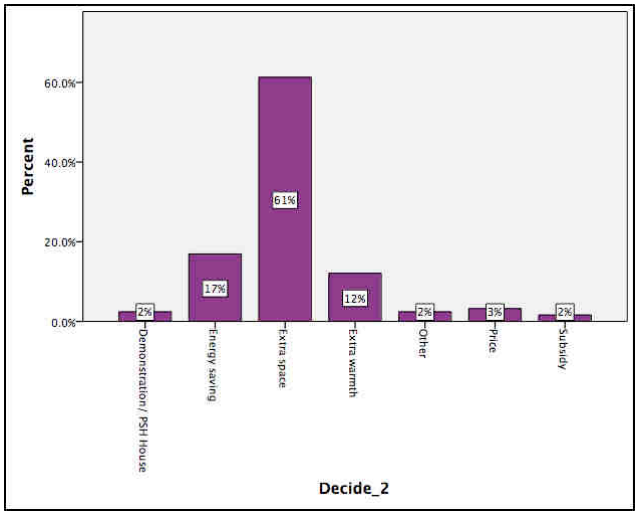


Question: How did you find out about PSH?

The central factor in household decision-making about PSH was the potential for it to create additional warmth (71%). When providing a second reason, respondents indicated that extra space helped shape their decision to purchase (61% for all respondents, or 65% for respondents with verandas only).

Graphs 7 & 8: Decision Factor for PSH.





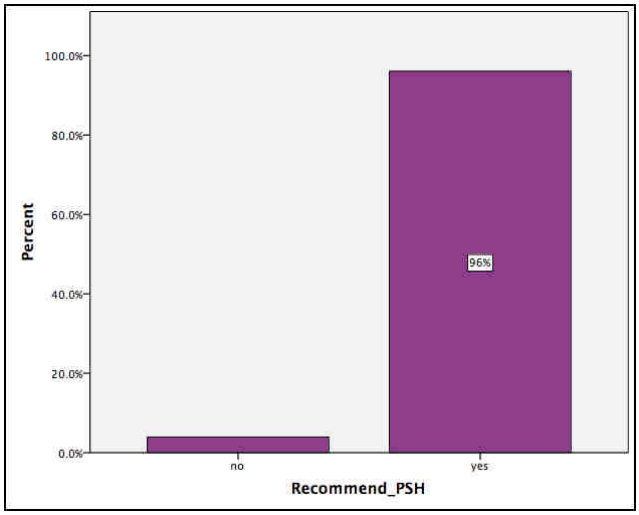
Question: Why did you decide to get PSH (first response)?

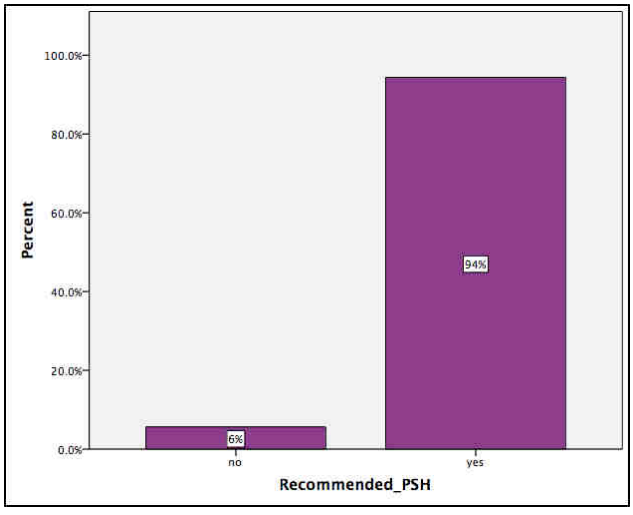
Question: Why did you decide to get PSH (second response)?

These findings, when considered alongside the importance of word of mouth in promoting PSH; the obvious fact that verandas create additional living space; and the proven energy-efficiency of PSH, suggest a positively reinforced cycle in which initial (heavily subsidised) dissemination generated tangible benefits (warmth and space),promoting word of mouth recommendations and in turn on-going sales.

The direct beneficiaries survey found that 96% of respondents would recommend PSH to another person and 94% had recommended PSH to other people.

Graphs 9 & 10: Recommending PSH.





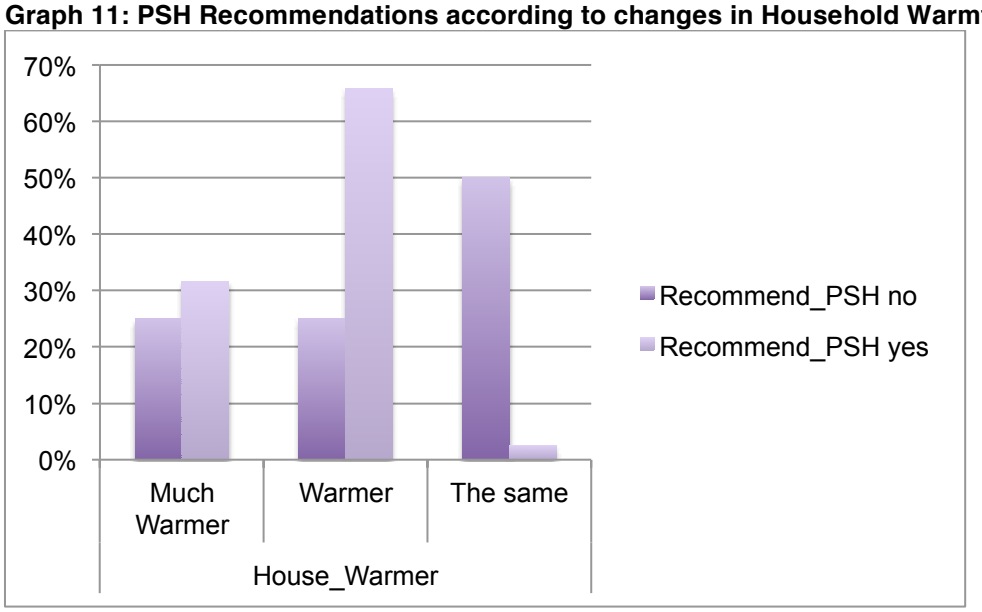
Question: Would you recommend PSH)?

Question: Have you recommended PSH?

Providing further evidence of this reinforcing cycle, a strong association (Fishers Exact, p=0.04; Cramer's V, ϕ_c=0.391) is observable between respondents' intentions to recommend PSH and

their experience of feeling warmer as a result of PSH. As the graph below indicates, of those who would recommend PSH only 3% reported that PSH did not effect the warmth of the house; whereas for the small minority that would not recommend PSH 50% of them reported that PSH had not positively effected the warmth of the house. See graph below. (NB no respondent reported the temperature got colder or much colder)

Graph 11: PSH Recommendations according to changes in Household Warmth.



Question: (using a scale) How warm is the house now with PSH?

Likewise those who found PSH the least useful were less likely to recommend PSH. (Fishers Exact p0.037; Cramer's V ϕ_c=0.496 – very strong association).

The logframe indicates a target subsidy level of 30%. During the life of the project Geres has explored the impact of different subsidy rates on PSH demand. During the first few months of the project high subsidy levels were set in order to stimulate market demand. Once the market became more familiar with PSH and its benefits better understood subsidies were gradually lowered. The accompanying table indicates that for PSH packages with verandas the maximum subsidy offered was 11,000 AFN or 70% of the building cost, with the lowest just 12% of the building cost. Towards the end of the project subsidies were to lowered to such a point that demand was stifled. Overall the average subsidy rate was 44% or 9,585 AFN. Please see the sustainability section for more discussion on the subsidy rates.

Statistics

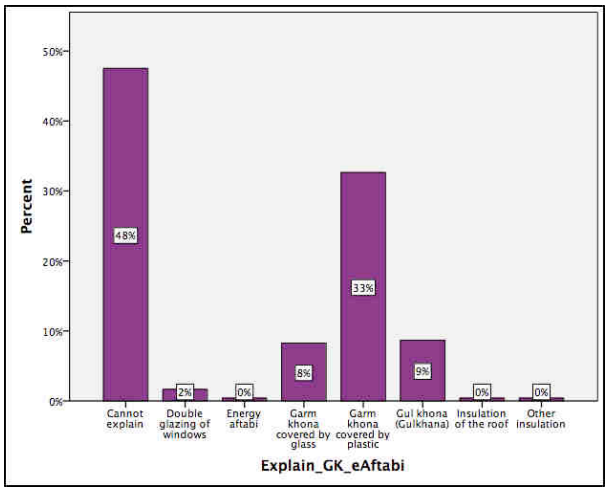
		Subsidy_Tot_Price	Subidy_Amount
N	Valid	152	152
	Missing	1	1
Mean		.4367	9,585.53
Median		.4465	10,000.00
Mode		.37[a]	10,000
Range		.58	9,000
Minimum		.12	2,000
Maximum		.70	11,000

a. Multiple modes exist. The smallest value is shown

Graphs 12: Indirect Beneficiaries' Understanding of Passive Solar Houses with Verandas.

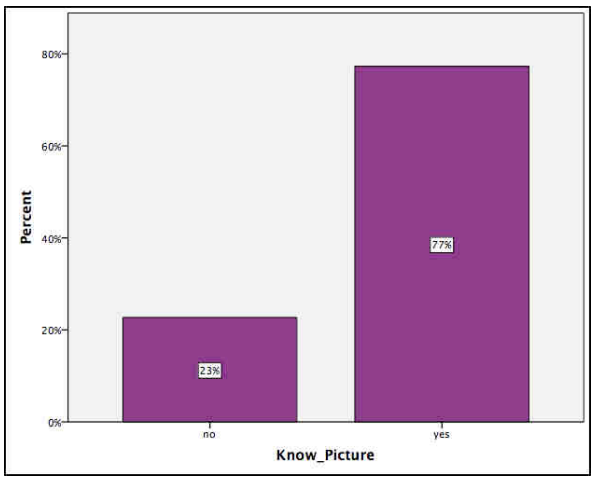
The Project Document defined indirect beneficiaries as all the residents of District 5, 7 & 8 in Kabul and as such the project had the intention of raising general levels of awareness among this wider group. The indirect beneficiaries survey conducted by the evaluator helps to explore this.

The majority of residents (52%), based on a representative sample, could explain, fully or partially, the concept of an "energy saving passive house with a veranda" when asked, compared with 48% who could not.



Question: Explain what you understand by an energy saving passive house with a veranda (Garm Khona eAftabi)

Graphs 13: Indirect Beneficiaries' Familiarity with Passive Solar Houses with Verandas.

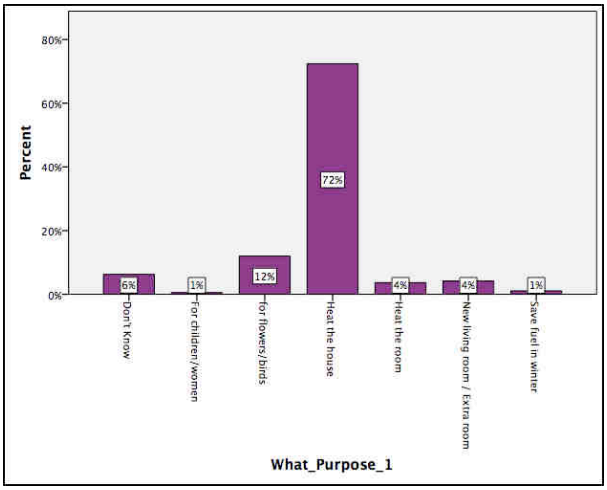


Additionally when showed pictures of a Geres covered veranda, most respondents (77%) were familiar with this type of structure.

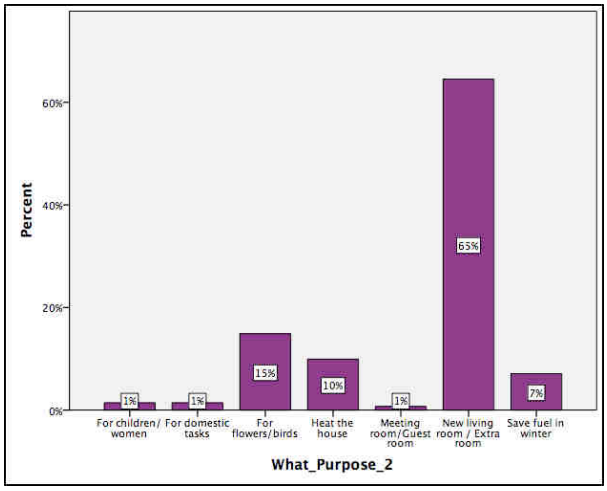
This familiarity was not limited to having seen something similar; respondents were also able to clearly explain the purposes of PSH verandas, with 72% indicating, first off, that the purpose was to heat the house. When offering a second purpose, the majority indicated that the verandas created an additional living space.

Question: (showing a picture of a Geres covered veranda) Do you know what this is?

Graphs 14 & 15: Purpose of Passive Solar Houses with Verandas - for Indirect Beneficiaries.



Question: What do you think is the purpose of a covered veranda (first response)?



Question: What do you think is the purpose of a covered veranda (first response)?

4.2.3.3 Effectiveness: Results Associated with Objective 3

Results Area 1.: Monitoring and evaluation

See section 4.2.1.3 above.

Results Area 2.: Information and coordination

In addition to materials produced specifically promoting PSH, Geres have also produced a range of materials, manual and publication in English and Dari promoting environmental issues and technologies that have been distributed widely.

Geres' leadership on a range of environmental issues was acknowledged, including international agencies (UN-Habitat), local NGOs and funding agencies, government departments, community organisations and the local authority. Geres' credibility in part lies in their technical expertise, but importantly also because of their track record of delivery and strong partnerships with local communities.

Geres has worked hard to foster the relationship with Kabul Municipality and this relationship has been instrumental in taking the work forward as well as laying an important foundation for increasing the scale of the project. Notably, Geres organised a European study tour for senior municipality leaders that served as a useful engagement tool. Additionally, the relationship with the Municipality coupled with support from key ministries such as the Ministry of Energy and Water and the National Environmental Protection Agency has opened the door for the future to normative aspect of programming, in doing so addressing questions of governance, policy, standards, local ordinances, education and training and enforcement that might support the promotion of sustain consumption and production in general as well as PSH specifically.

4.2.4 Effectiveness Summary

From the analysis presented above, Geres provides a convincing response to the 3 acid tests when considering the desirability, feasibility and viability of the product range developed as a whole and their acceptance and effective application in the market place. On this basis the project has been effective.

Overall conclusion:
The project has made very good progress, fully executing the majority of its responsibilities and outputs as planned. Beyond this the project has been strongly effective on multiple fronts.

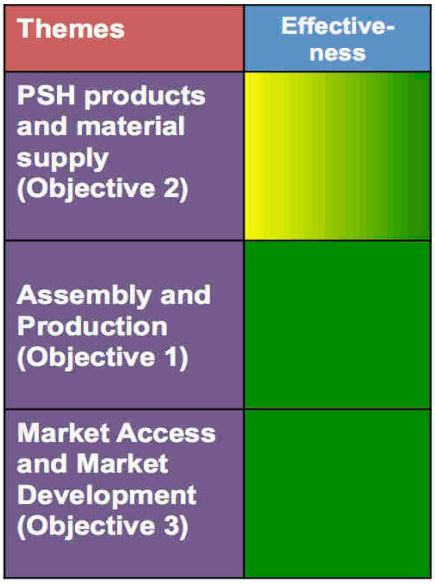
Specific assessments:

- The project activities and outputs are clearly linked to outcomes
- Aside from direct delivery, the project has made effective use of its advocacy and enabling roles to stimulate wider interest of key stakeholders
- The quality of outputs and outcomes is generally high
- Some areas are seen as particular strengths, for example, the project's training methodologies, adapted technologies, community engagement techniques, commitment to the highest standards of monitoring and evaluation and business support strategies
- Technical assistance offered has been suitable for the emerging status of the value chain
- The project has developed a range of well adapted technologies, with significant energy-efficient properties
- The project has offered product to market that have a range of benefits beyond energy-saving, enhancing their desirable

- The project has offered products to market using a subsidy stimulating demand, achieving wide dissemination within the target communities
- Capacities of artisanal business producing and services PSH products have effectively been developed
- The project has developed a range of highly productive community-orientated methods for raising awareness of PSH technologies
- Research and development for the adaptation of stoves has yet to deliver a viable, market ready product and judgment is required as to whether there is continued justification for the investment of resource and technical expertise in this area of activity
- Project arrangements are clear, strong and functional. Partners appear clear as to their roles and responsibilities, albeit that the majority of responsibilities lie with the Geres team
- The potential for generating income through carbon credit as been fully explored. Notwithstanding the excellent energy saving properties of PSH packages, carbon financing is not viable, since declining carbon value does not balance the cost of required monitoring energy savings
- Widespread awareness of PSH and its benefits has been created that stretch beyond the immediate group of direct beneficiaries to the Districts as a whole.
- The project has delivered impressively against stretching targets, in particular being close to the target of delivering 2,880 PSH units.

On this basis, the evaluator using the RAG rating system considers performance to be Green for assembly and production as well as market access and development on the basis that both progress and effectiveness are strongly substantiated.

For product and material supply, performance is Green/Amber – on the basis that stove adaptation has progressed slowly and effectiveness is still in doubt, and on the basis that the PSH product range has not proven to be viable for carbon financing as planned.



4.3 EFFICIENCY

Efficiency *– A measure of how economically inputs (funds, expertise, time, etc.) are converted into outputs. A comparison of the value (not necessarily monetary) of the output of the system and the resources needed to achieve that output.*

Efficacy - *the extent to which a project's objectives are achieved or expected to be achieved given the means used* - the project's chosen methodologies perform well.

4.3.1 Project Efficiency

A number of conclusions can be drawn from a review of the project's financial budget and expenditure that supports the notion that the project utilises resources efficiently:

- The budget allocation in general was modest in relation to ambitious objectives.
- The project team is comprised of a large number of national staff, in proportion to international staff. This has helped keep project costs down although there may be opportunities to reduce the technical assistance budget should the project continue in some way in the future
- The approach to national staff recruitment has been successful, ensuring high-levels of relevant skills and experience at managerial and field staff levels.
- The project pays national staff at a rate similar to other NGOs operating in Afghanistan
- Administration costs are managed carefully; this includes ensuring that officer time is focused on work in the field. This is partly achieved by not over elaborating management systems whilst ensuring critical recording and administration is undertaken.
- The project uses competitive tenders, bids and quotations to ensure value for money.
- Geres has invested in developing staff capacities to ensure a high level of project activity
- Geres has developed a strong monitoring system that is well place to provide timely feedback on occasions when performance is not meeting expectations.
- The project team and organisational structure, including partner, roles is relatively lean and not top heavy in terms of excessive management resource allocation.
- The team are dedicated, experience, well qualified, and have complimentary skills.
- The project has geared up staff capacity incrementally, in line with workload, growing from a smaller team. This has meant that the project did not carry excess capacity in its early stages.
- The project has successfully adapted to a reduction in budget brought about as a result of failing to demonstrate the viability of carbon financing.
- The project should be in a position to spend the balance of its revised budget by project end
- Geres has been able to respond to a budget reduction (€300,000) by seeking efficiencies in the design and delivery of the project. It has done this by adjusting subsidy rates and promoting non-veranda packages such as insulation and double-glazing.
- Elaborate monitoring and certification processes limit the risk fraudulent or corrupt practice linked to the provision of PSH packages.
- PSH produces significant saving for direct beneficiaries as well an impressive range of social improvements (see effectiveness and impact sections). It does this at a modest cost per unit.
- Project delivery has kept a pace with stretching targets brought about, in part, by an effective approach to raising awareness and stimulating demand for PSH packages.
- Project methodologies such as the adoption of a train the trainer approach have been effective and reduce the cost of delivery.
- The project has invested considerable staff and resource in the monitoring of field activities. These activities have been appropriate and in-line with the intentions of Project Document

there is scope to reduce the level of activity as the PSH value chain matures or further market orientation occurs (see sustainability section).

- Reliance on the Geres project team to deliver a large share of the projects output, rather than through the contracting of local partners or service providers, although it has ensured strong progress and effectiveness, may have had an impact of total costs. There are opportunities to harness local capacities more directly in future iterations of the programme.
- Geres has not wasted money by embarking on stove dissemination and awareness raising activities when there remain doubts as to the effectiveness of the current prototype.

4.3.2 Efficiency Summary

Overall conclusion:
The project has delivered tangible outcomes and is having measureable impact. These outcomes are being delivered efficiently and to a scale that minimises unit costs in relation to the benefits derived.

Themes	Efficiency
PSH products and material supply (Objective 2)	
Construction and business support (Objective 1)	
Market access and market development (Objective 3)	

On this basis the evaluator, using the RAG rating system, considers performance to be Green– on the basis that the project is broadly efficient and efficacious.

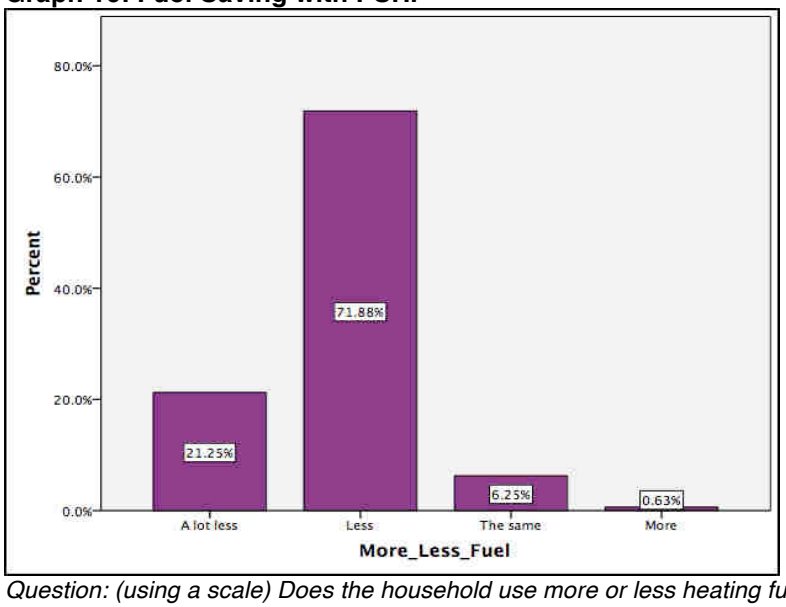
4.4 IMPACT

Impact *– the positive and negative changes produced by a project, directly or indirectly, intended or unintended.*

4.4.1 Impact[5] on the environment and household budgets

Households were able to qualitatively indicate the degree to which PSH had reduced the winter use of fuel as indicated in the following graph. Specifically, 72% indicating that they were using less fuel with less than 7% stating they were using the same, more or much more fuel.

Graph 16: Fuel Saving with PSH.



Question: (using a scale) Does the household use more or less heating fuel because of PSH than in the past?

Respondents were also able to quantify fuel saving with the direct beneficiaries survey indicating that the mean annual savings per household attributable to PSH totals 7,000 AFN or €108.

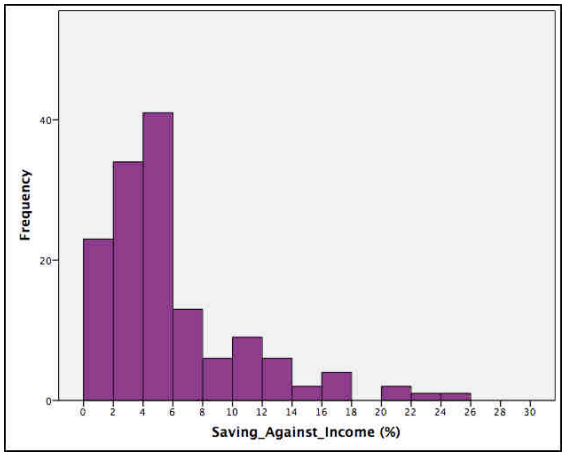
[5]**Note on comparative data**
The indirect and direct beneficiaries survey, where the methodology allowed, replicated a number of questions originally posed in the SEADEP survey to allow for comparison with baseline measure for energy use and a range of social-economic measures. Since sample and field methods varied between the surveys as well as a number of other economic, security and climatic conditions as such direct comparison needs to be approached cautiously.

The table below compares descriptive statistic for a number of key characteristic of sample households:

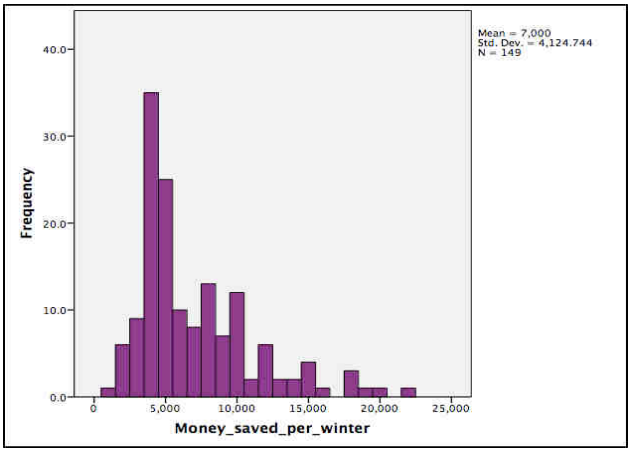
	SEADEP	Indirect beneficiaries survey	Indirect beneficiaries survey
Household Income (AFN)	180,889	179,257	
Income per household member (AFN)	19,774	19,131	
Average number of people per household	9.7	9.4	10.0
Average number of children per household	4.3	4.2	4.1

When calculating this saving as a percentage of declared income, the average saving was to 6.6% of the annual household budget.

Graph 17: PSH Winter Saving as a percentage of Household Income.



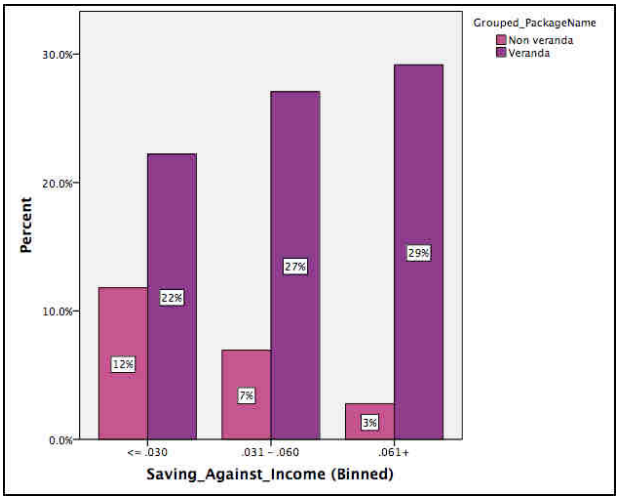
Graph 18: Average PSH Winter Saving per household.



Question: How much money do you estimate you save each winter because of PSH?

Graph 19: PSH Winter Saving as a percentage of Household Income according whether the PSH package included a Veranda.

When considering the association between savings and whether or not verandas were part of the PSH package, savings as a percentage of income bore significant results, with the association being moderately strong (Pearson's Chi Squared, p=0.008; Cramer's V, ϕ_c=0.257). The adjacent graph shows a larger proportion of households with verandas falling in the highest income per saving category; whilst for houses without verandas, the largest proportion fell in the lowest income per savings category.
(Pearson's Chi Squared, p=0.053).



In order to crosscheck estimates of savings per household attributable to PSH, the direct beneficiaries survey also recorded savings in terms of units of wood and coal per winter period, with the average wood saving being 448 Kgs and 130 Kgs for coal. Using the market rates for wood and mineral coal recorded in the SEADEP, this saving equates to 7,588 AFN, a variation of less than 10% suggesting that the respondent's savings estimates in cash and kind are consistent. Likewise, the average saving of 448 Kgs is equivalent to somewhere in the region of 20% (heating only) to 45% (heating and cooking) of the annual household wood bill - a range that is not discordant with Winter Monitoring Report findings.

Geres' own calculations based the Winter Monitoring Report for savings as a percentage of household income generated a lower estimate (2%) than that of the evaluator. This may be explained in three ways:

- The Winter Monitoring Report adopted a conservative approach to its estimate and may have been too cautious

- The current winter in Kabul has been extremely mild, as such savings expressed for this year during the evaluation surveys may not reflect typical savings

- Direct beneficiaries, because of their strong satisfaction with the project, may have to some extent over stated the saving made – this seems least likely as savings were calculated both report from wood and cash savings, with the two being very consistent.

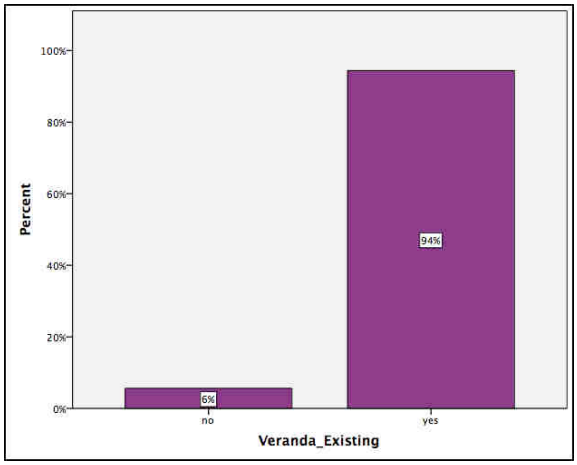
Assuming all PSH remains in tacked and in place, then for households alone with veranda, the annual wood saving approximates 965,000Kgs and an additional 280,000Kgs of coal. In financial terms the total saving to households is in the range of €230,000 to €250,000 per annum. Converting these into reductions in green house emissions, the Winter Monitoring Report estimates that verandas save 0.54 tCO_2e/year. In total therefore, the annual CO_2 reduction is approximately 1,160 tonnes. This is equivalent to:

- 500,000[6] consumed litres of petrol (2.331 Carbon Trust)
- 2,700 consumed barrels of oil (US-EPA)
- the carbon sequestered by 30,000 tree seedlings grown for 10 years[7]

Longer-term impact on household budgets will depend on whether PSH packages remain in place, are functioning and are maintained correctly. There are a number of factors that can effect this which are product specific. For example, insulation materials tend to be left in situ for many years and are not exposed, so are not easily prone to damage. Double-glazing and veranda glass and plastic coverings can be broken or torn and PSH requires regular maintenance.

In this respect, the direct beneficiaries survey found that the ability to maintain verandas was an important issue, with a potential to curtail longer-term benefits.

Graph 20: Percentage of Veranda structures found Intact.



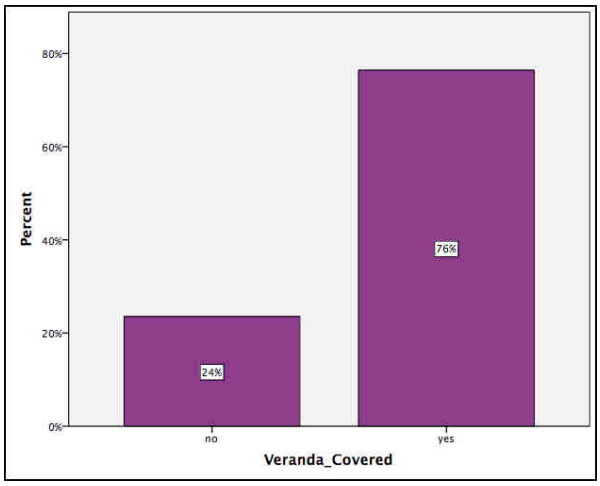
Of those households surveyed that had received verandas as part of their PSH package 94% of the veranda structures remained in place; the remaining 6% had been removed. Reasons given for removing PSH did not follow a clear pattern, but included for example the need to remove the structure in order to rehabilitate the house, and statements such as that the veranda took up too much space. Similarly, no association was found between veranda structure still being in place and the affordability of maintaining PSH.

NB: A visual inspection was undertaken to confirm the status of verandas.

[6]Using a conversion factor of 2.331 as publish by the Carbon Trust.

[7]As published by the US Environmental Protection Agency for medium growth coniferous tree, planted in an urban setting and allowed to grow for 10 years.

Graph 21: Percentage of (intact) Veranda found Covered.



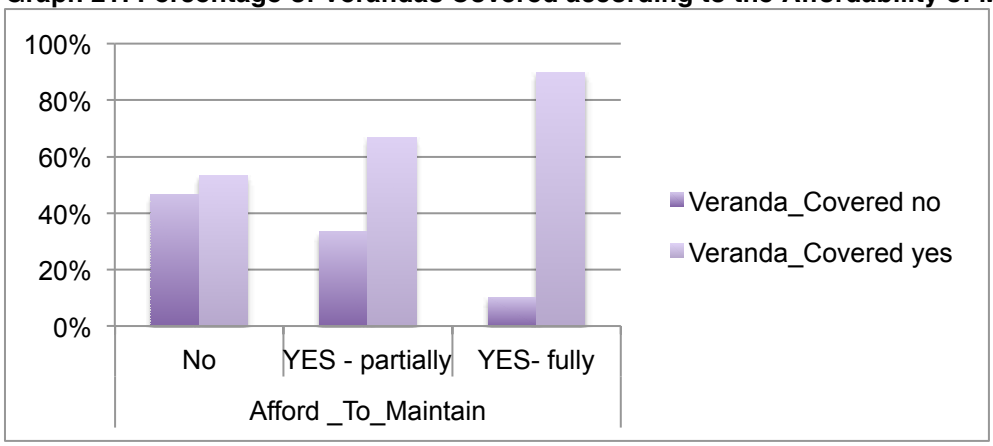
Of more significant however was the number of PSH structures that were in place but that were not covered. Of the total number of verandas that were still in place, the survey found 76% were covered with plastic, or roughly a quarter were not. As such, overall 72% of verandas were still functioning, whilst 28% were not.

Bearing in mind that for the households with covered verandas the majority would have already replaced the covering during a previous winter (see section 4.6). This result in itself can be agued to be reasonably positive (further analysis strengthening this view).

NB: A visual inspection was undertaken to confirm whether verandas were covered.

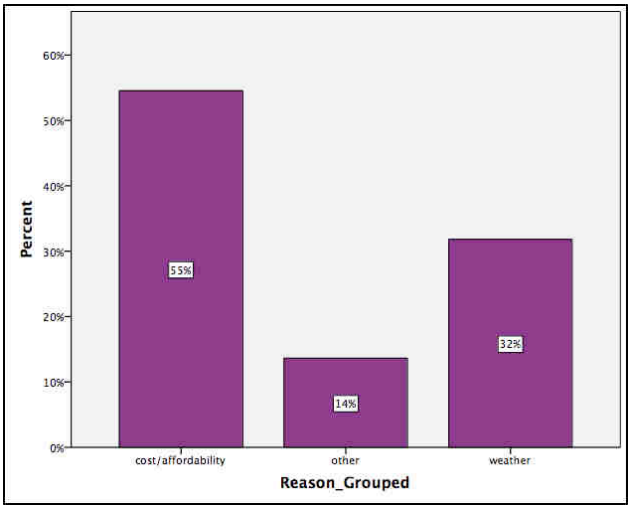
There was an observable and strong association between affordability of maintenance and whether or not the veranda was still covered in plastic (Fisher Exact p=0.001, Cramer's V = 0.347).

Graph 21: Percentage of Verandas Covered according to the Affordability of Maintenance.



Question: Are you able to afford the cost of maintaining the veranda?

Graph 22: Reasons giving for Verandas not being Covered.



This being said, affordability was not the only factor effecting the repair or replacement of veranda plastic. Although the majority of households without covered veranda (55%) mentioned the cost of replacement as the reason for not replacing PSH, 44% offered alternative explanations. Of this latter group 14% mentioned recent incident, for example, "10 days ago, the children damaged the plastic" or an intention to replace the PSH soon, "I have brought the plastic, but have had no time to install it". An additional one third of respondents indicated that the unseasonably warm, dry winter in Kabul (2014/15) meant that there wasn't sufficient

Question: What is the reason why your veranda is not covered?

reason to cover PSH – certainly it is likely to be one of the warmest and driest winters on record in Kabul. Discounting this group's responses provides a clearer reflection the proportion of household than are struggling to afford the cost of replacing PSH (13%).

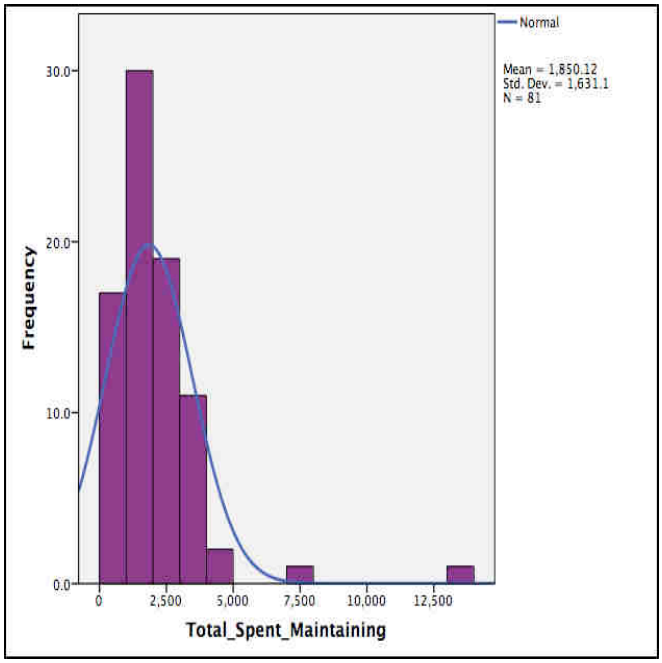
It is important to contextualise the cost of maintenance in order to better understand the impact this has had on the 13% of households who have not been able to afford to replace veranda plastic. Firstly, the costs of PSH are modest in relation to general building costs (SEADEP). Typically, after taking into account the average subsidy level (9,586 AGF) households have funded approximately half the cost of PSH provision. This amount is still a significant proportion of the annual household budget, around 5-6%.

The following table provides a cost summary for verandas:

	Afghani			EURO €	
	Veranda only	Veranda + Insulation		Veranda only	Ver + Insulation
Average Cost*	18,459	21,894		284	337
Average Cost as a percentage of annual household income	10%	12%			

* excluding a single outlier(49,290)

Graph 23: Average Maintenance Cost per Household.



Question: How much money did you spend on the maintenance of PSH?

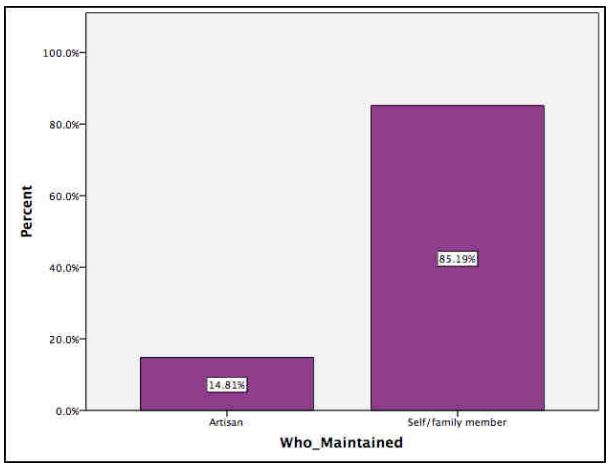
In comparison, maintenance costs are much lower. The adjacent histogram indicates the average cost of maintenance is 1,850 AFN, just 1% of annual household income. Statistical test were not conclusive in finding an association between household income levels or household income levels per household member and the affordability of maintenance or whether verandas structures we covered or uncovered.

A majority of households (85%) appear to be choosing to maintain PSH themselves, rather than employing local (Geres supported) artisans to do the work. This choice may be motivated by a number of potential factors – but it is assumed, based on focus group interviews, that it is primarily a strategy to reduce the cost of maintenance.

The survey was unable to confirm whether this was the case in practice since no statistically significant association was found between the price paid towards maintenance and whether the maintenance work was undertaken by an artisan or by a family member or relative.

Since family members and relatives will not have been trained in PSH repairs, there is a risk that work will not meet the high standards of Geres artisans- this is important since poor fitting can reduce energy efficiency.

Graph 23: Who Maintains PSH.



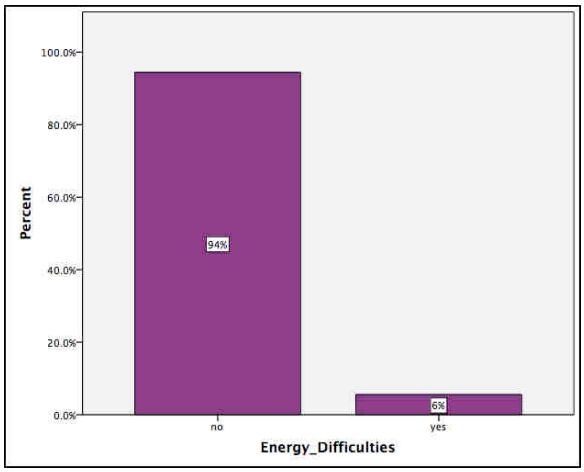
Question: Who did you use to maintain you PSH?

4.4.2 Impact on wider factors contributing to poverty

Clearly, the saving to household budgets brought about as a result of installing PSH are likely to impact on poverty and in particular for the households falling into the lowest income categories. These saving will have a direct impact on levels of fuel poverty, but also general income related poverty.

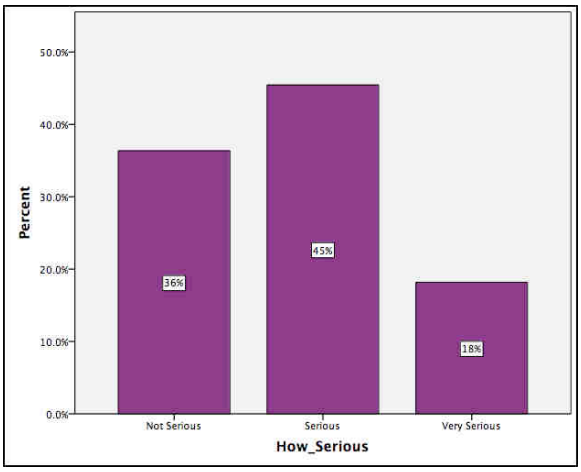
4.4.2.1 Fuel Poverty

Graph 24: Percentage of Household experiencing Energy Difficulties over the Winter.



Question: Did you experience difficulties meeting you energy needs this winter?

Graph 25: Seriousness of Energy Difficulties faced over the Winter.

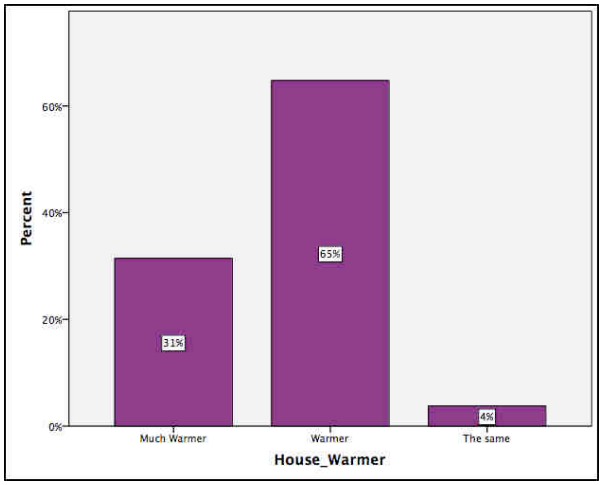


Question: (using a scale) If you experienced difficulties meeting you energy needs this winter, how serious where they?

The survey indicated that 94% of PSH households reported having no energy difficulties during the current winter. Of the 6% that did express energy problems, 36% of them described the difficulties as being not serious, with 64% describing their energy problems as being serious or very serious.

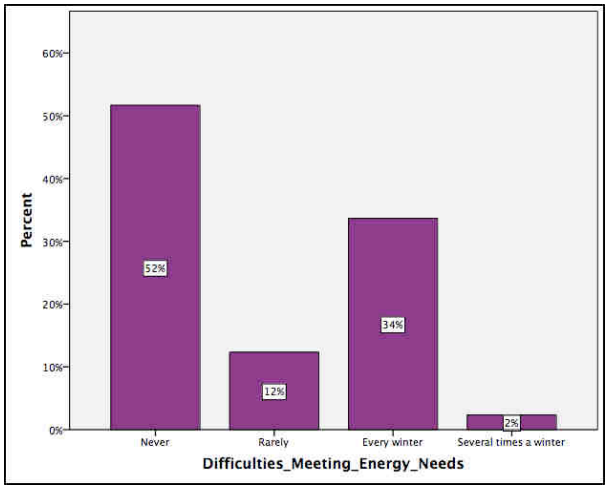
It should also be remembered that PSH packages not only save fuel, but also typically increase the ambient household temperature by 1 or 2 degrees (Winter Monitoring Report). In this respect, 96% of interview respondents indicated that their household was warmer or much warmer than before having PSH.

Graph 25: Household Warmth with PSH.



Question: (using a scale) Is your house warmer since installing PSH?

Graph 25: Percentage of Household experiencing Energy Difficulties before the project introduced PSH.



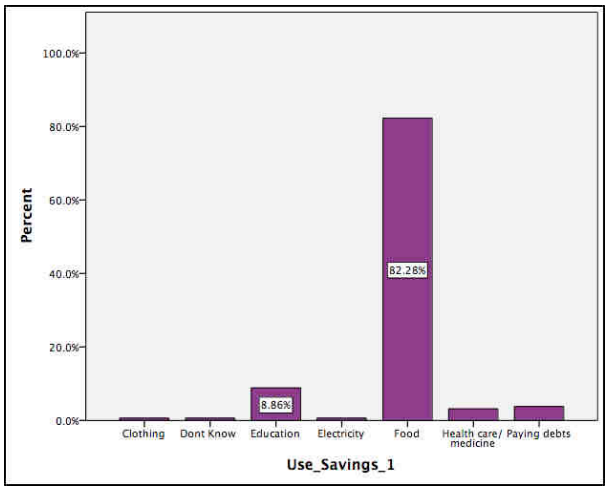
These findings stand in contrast to the baseline data provided by the SEADEP report – pre PSH installation. Here, 36% of respondents reported having difficulties regularly with meeting their energy needs.

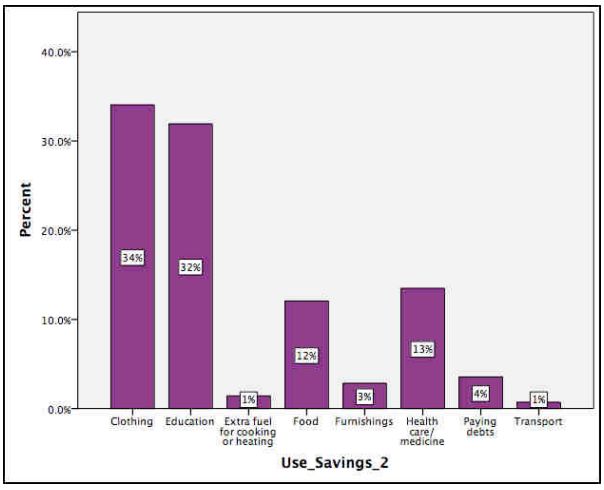
SEADEP Baseline Survey Question – (using a scale) Do you experience difficulties meeting the household energy needs?

4.4.2.2 Income Poverty

The direct beneficiary survey provided an indication of how households used the money they saved as a result of PSH with a clear pattern emerging. In terms of interviewee's first stated response 82% indicated they used PSH savings to buy food for the household, followed by 9% stating they invest savings in education with smaller numbers mentioning health care, paying off debts and buying clothing. These finding did not differ statistically by household income or by income per household member. (See graph on following page.)

Graph 26 & 27: Use of Saving arising from PSH.



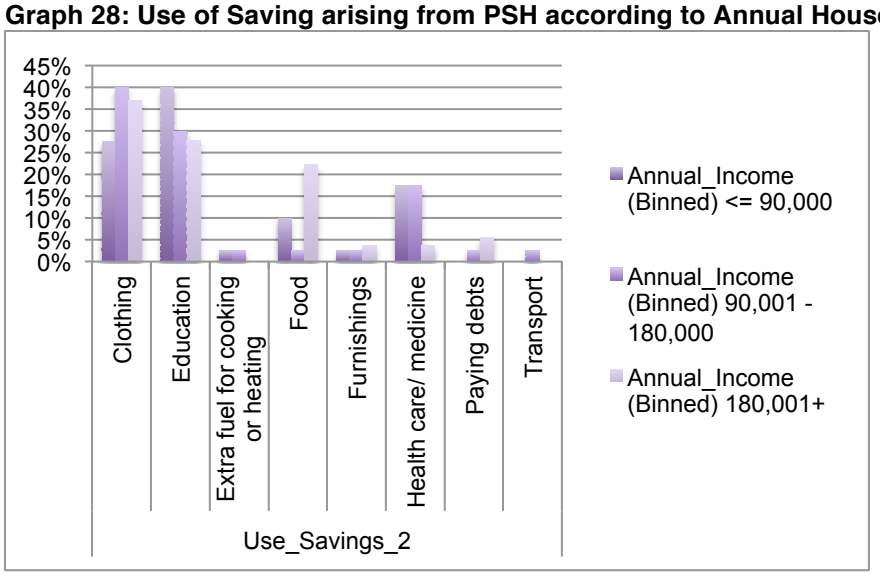


Question: How did you use the money you saved as a result of PSH – first response?

Question: How did you use the money you saved as a result of PSH – second response?

When offering a second use for savings from PSH, a number of additional categories were recorded, albeit with low counts, such as transport, furnishings and purchasing additional fuel. Overall though, education and clothing were the most typical responses. With second responses, there was also a differentiation of responses with income levels. Poorer households (18%) were significantly more likely to mention health care than wealthier households (4%). The association between income and secondary responses was moderately strong (Fishers Exact Test, p=0.036; Cramer V, ϕ_c=0.279).

Graph 28: Use of Saving arising from PSH according to Annual Household Income Groups.



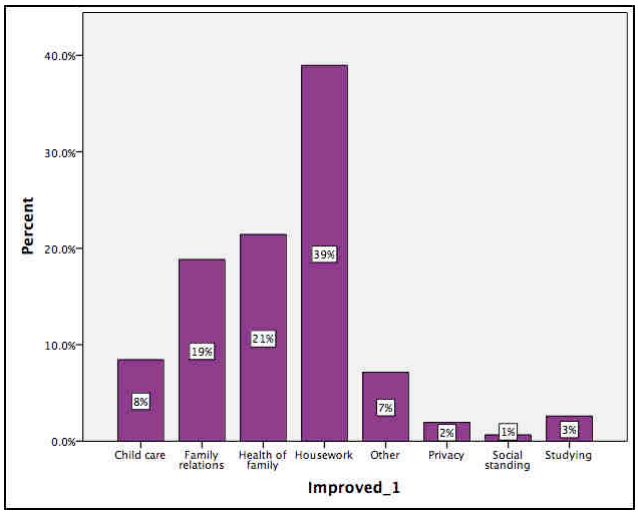
4.4.2.3 Health Outcomes

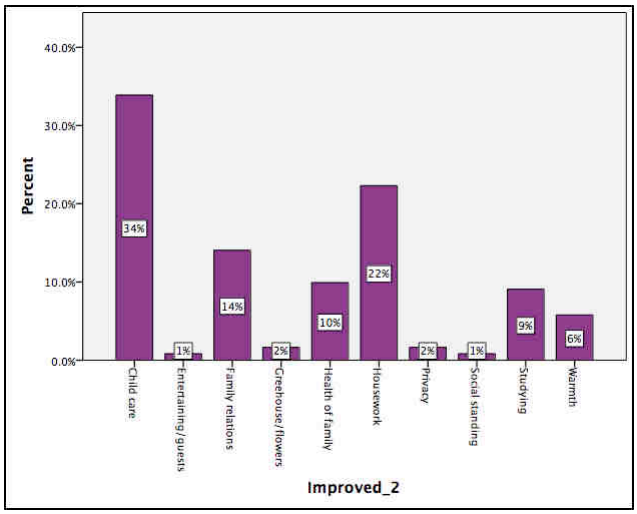
Geres' PSH programme has the potential to deliver a number of health outcomes. These can be derived at individual household level –for those with PSH, or potentially to wider beneficiaries as a result of reductions in PM2.5 and PM10 emissions at neighbourhood level. It is beyond the scope of this study to make definitive statements regarding health outcomes as this is specialised technical work requiring specific complex baseline data, monitoring, control groups and reliable data regarding the health of the population as a whole. For this reason, the following

description is meant to outline the potential of PSH to improve health outcomes by reflecting the perceptions of PSH households, rather than present a scientific study.

When asked what had improved as a result of having PSH, 21% of respondents, and the second most popular answer, mentioned health of the family. Additionally when respondents offered a second improvement, health of the family was mention by and additional 10% of respondents. Combining these responses suggests that approximately one third of households felt health had improved as a result of PSH.

Graphs 29 & 30: Improvements Resulting from PSH.



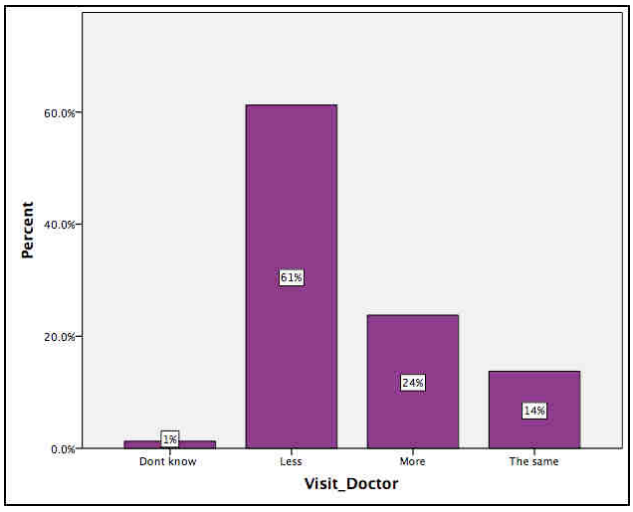


Question: What has improved as a result of your PSH?– first response?

Question: What has improved as a result of your PSH? – second response?

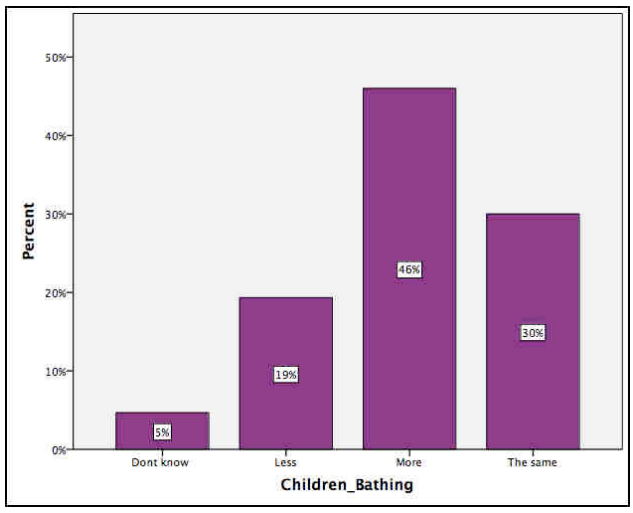
Supporting this, 61% of respondents reported having to visit the doctor less since having installed PSH, compared to the 24% that reported an increase in visits to the doctor. Again, caution should be applied in interpreting these findings since people may visit the doctor more often if they are more able to afford to.

Graph 31: Changes in Frequency of Visit to the Doctor.



Question: (using a scale) How often does the household visit the doctor since installing PSH?

Graph 32: Change in Frequency of Bathing for Children.

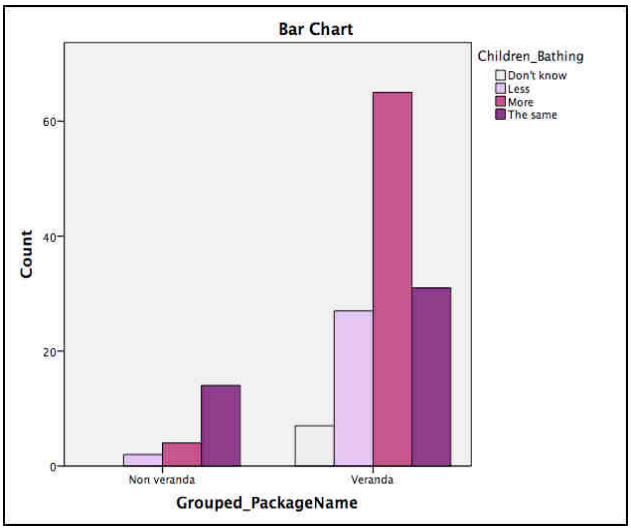


Question: (using a scale) Since installing PSH, how often do children bath in the winter?

Another indication of health improvement related to the frequency of bathing – with both the SEADEP and evaluation study looking particularly at child bathing. Here, 46% of respondent suggested that children bathed more often than they did before having PSH.

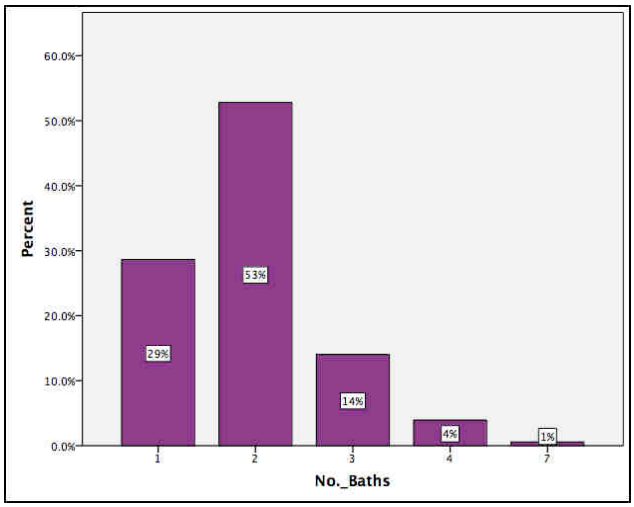
Graph 33: Change in Frequency of Bathing Children according to whether or not PSH packages included a Veranda.

Focus groups concurred that by leaving water to heat slowly under the warmth of the veranda during the day, it can reach temperatures that are more comfortable for bathing than is normally the case in winter. This conclusion is further supported by the fact that statistically households without veranda packages were typically bathing children more often with PSH than with out. (Fisher's Exact Test p=0.01; Cramer's V, 0.345 - very strong association.)

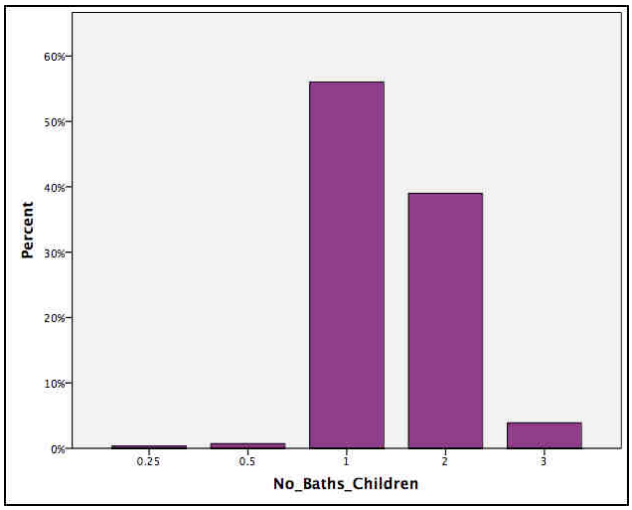


These associations are reaffirmed through comparison with the SEADEP baseline study. Before the project, household reported on average children on bathed 1.46 times a week. However, the direct beneficiaries survey indicated that for household with PSH the mean had increased to 1.9 baths a week.

Graph 34: Frequency of Baths for Children during the winter recorded before PSH provisions (SEADEP).

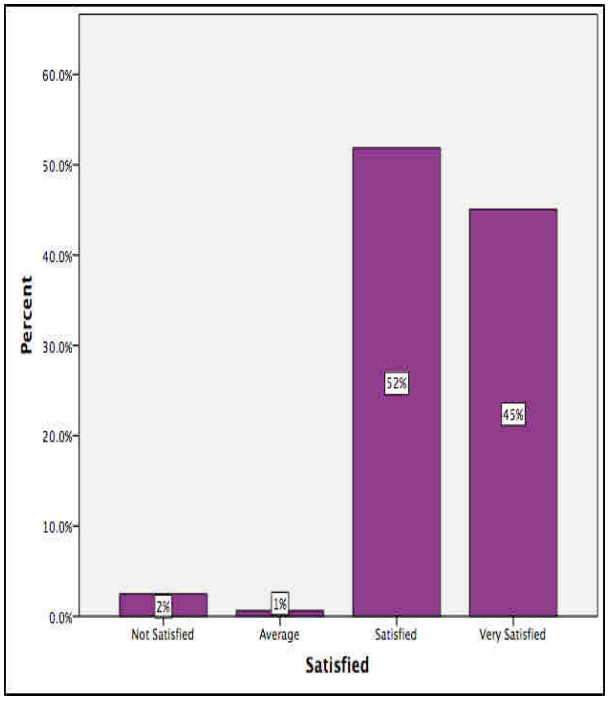


Graph 35: Frequency of Baths for Children during the winter recorded by Households with PSH.



Question: How many time a week do children bath?

Graph 36: PSH Satisfaction Rates.

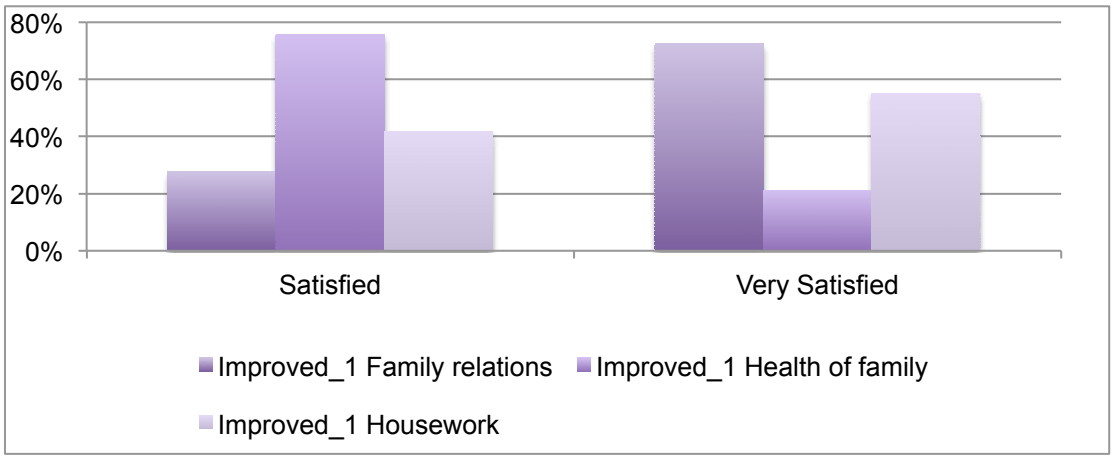


PSH satisfaction rates appear to have a bearing on perceptions regarding family health. Overall,97% of respondents reported being satisfied (52%) or very satisfied (45%) with their PSH package, but this varied depending on the main improvement they felt PSH had brought about. Of people who said family relations had been improved 72% were very satisfied and 23% being only satisfied; but for those who mention improvements to the health of the family the picture was reversed with less respondents very satisfied with their PSH (21%) and 76% who were just satisfied. One tentative explanation for this might be that some households are less clear as to how PSH supports improved health outcomes – that is to say that although households are aware of improving family health, they may not necessarily attribute this to the healthier living conditions brought about by PSH.

Question: (using a scale) How satisfied are you with the PSH?

This statistically significant association is of moderate strength (Fisher's Exact Test, p=0.003; Cramer's V, ϕ_c=0.254).

Graph 36: PSH Satisfaction Rates by type of Improvement Experienced.



4.4.2.4 Education Outcomes

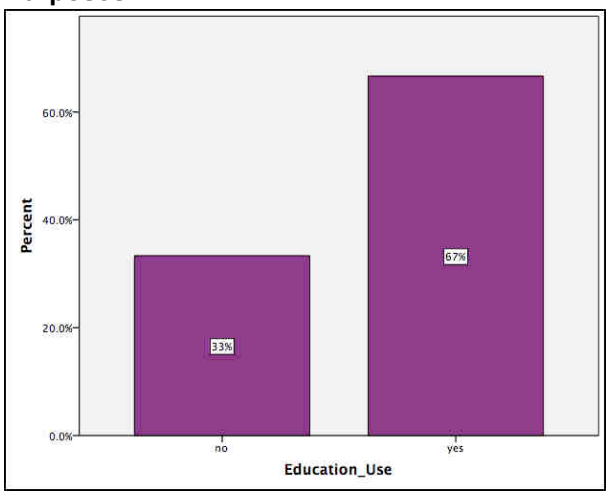
The following section sets out the case for a link between PSH provision and improved education outcomes. As with health, this section is meant only to explore the potential for PSH to support education and not provide quantifiable improvements to school attendance, completion and attainment rates.

To consider the educational impact of PSH, it may first be useful to explore related concepts of usefulness, satisfaction and additional space as discussed in **Annex G.** In summary the data shows that usefulness and satisfaction with PSH are linked, in part, to the provision of additional

space (verandas). This additional space is used more by children than adults. Additionally, the extra space is used primarily for children's activities.

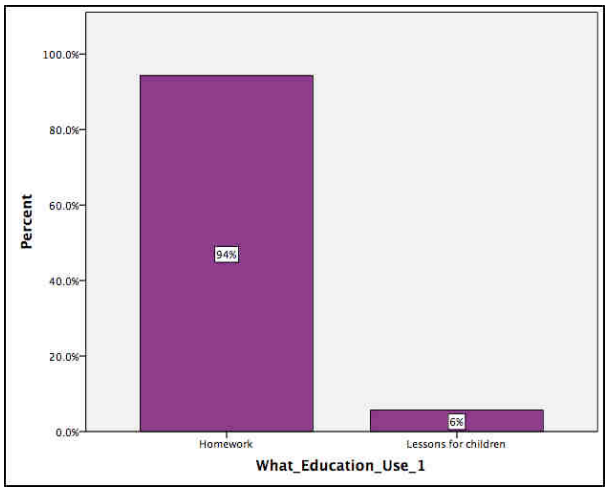
Respondents were then asked specifically if they used the extra space for education activities. In response, two third stated that they did. When asked what these education activities comprised of, 94% responded initially with homework and 6% with lessons for children. When asked for a second response to this question, these remained the only categories, but their magnitudes reversed.

Graph 37: Use of Veranda for Educational Purposes.



Question: Do you use the veranda for educational purposes?

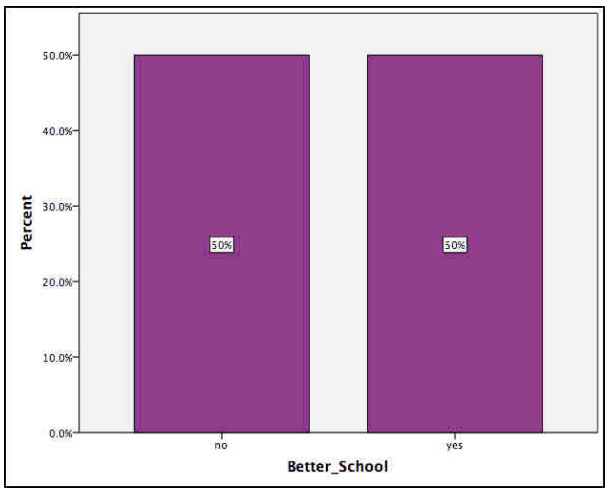
Graph 38: Type of Educational Uses.



Question: If so, what educational uses (first response)

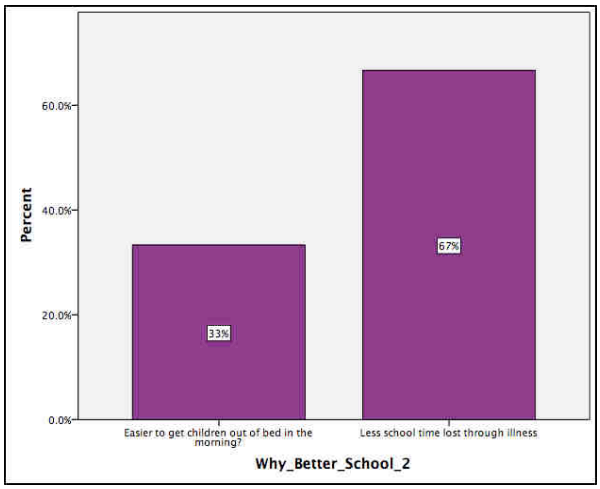
Respondents were also asked if children were doing better at school since installing PSH. In this case, equal proportions said they were, as said they were not. For the 50% of respondents who said children were doing better at school, the vast majority (99%) mentioned that children spent more time studying. When offering a second explanation, two thirds mentioned that children miss less school due to illness, whilst the other third mentioned it was easier to get children out of bed in the morning (see below).

Graph 39: PSH and Performance at School.



Question: Are your children doing better at school since installing PSH?

Graph 40: Reasons for Improved Performance at School.



Question: If so, why are they doing better? (second response?

4.4.2.4 Gender and social relations

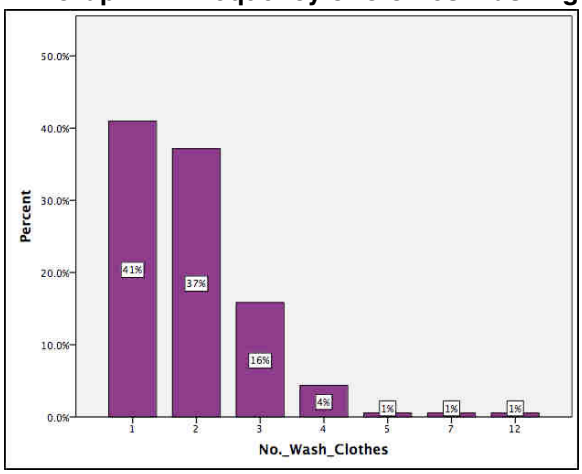
48% of the survey sample were women, but only one described herself as the head of the household, whereas the majority of men interviewed described themselves as such – this in itself is indicative of Afghanistan's traditional and patriarchal society. The SEADEP baseline survey builds on this theme of gender and describes how gender inequality and gendered roles restrict freedom of movement and association, access to education and the labour market for Afghan women. From this perspective therefore, PSH provision, since it impacts on the domestic environment has particular implications for women.

The SEADEP survey also describes how the burden of domestic tasks is made more difficult due to the harsh Kabul winters. In particular, it makes mention of the difficulties of heating water for washing clothes and bathing; the lack of space and warmth for hanging and washing clothes; and the need to complete tasks outdoors. In addition, the winter period creates more dirt and with it cleaning responsibilities, coal and wood burning stoves contribute to this because of the soot and dust they omit.

As illustrated clearly in the proceeding sections PSH verandas are used particularly for gendered tasks such as housework and child minding. Moreover, women are identified as being the primary users of the space compared to men.

With verandas, women are washing clothes regularly. The following graph illustrates that clothes are being washed with relative frequency, the majority of households washing clothes more than once a week (59%)

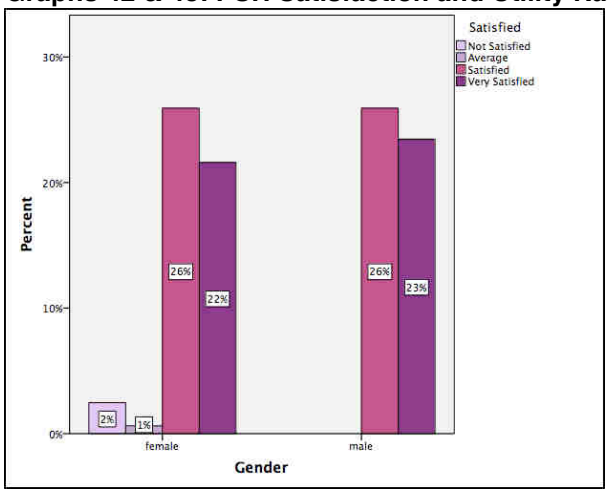
Graph 41: Frequency of Clothes Washing.

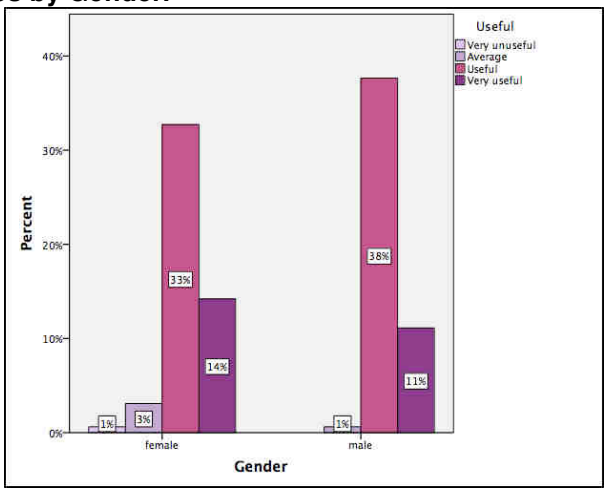


Question: How many time a week do you wash clothes?

Despite the benefits of PSH of women, gender does not make a significant difference to levels of satisfaction or utility expressed by respondents as the following graphs depict. In summary ratings of usefulness of and satisfaction with PSH are extremely high regardless of gender.

Graphs 42 & 43: PSH Satisfaction and Utility Rates by Gender.





Regarding social relationships, 20% of respondents with veranda stated that PSH helped improve family relations, whilst 10% suggested verandas were useful because they are good for family activities (Please see notes on usefulness, stratification and additional space in **Annex G**). Perhaps illustrating this more acutely is the annotated list of reasons way household felt that PSH had improve things in the home.

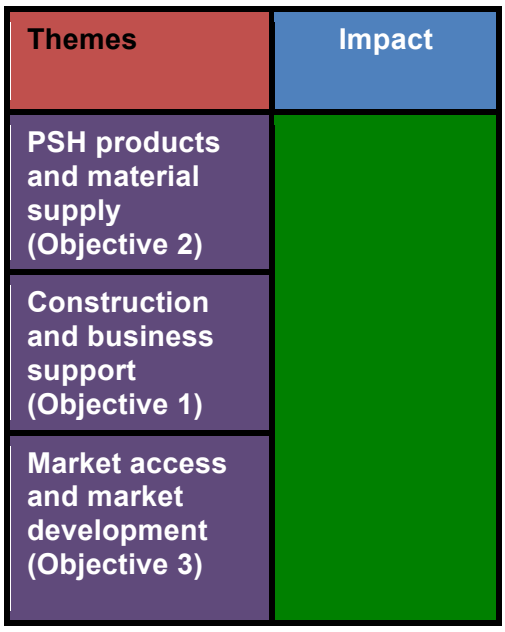
Why_1 (have things improved?)	
abates sickness	cooking, washing and children can spent time on the PSH
abates sickness, room not lost heat	cooking, washing and doing daily work on the PSH
all the families member come together inside of the veranda, we can do private work	cooking, washing clothes. Children studying here
attached room does not lose the heat	daily workers and children studying here
bathing children, washing clothes other activities	daily working, children studying and washing clothes
child and women can do any activities	decreases the sickness
children can studying, women cooking here	decrease sickness
children doing studies on the inside of PSH	decrease the sickness
children doing study and washing clothes	decrease the sickness, as will good for daily works
children mostly using from PSH, some time washing clothes and cooking	different activities doing on the PSH, washing cloths, children doing study
children playing inside of the veranda specially during the winter	doing daily work on the PSH
children studying here	doing daily works
children studying here and washing clothes, cooking etc.	doing daily works on the PSH
children studying here and women doing daily work	doing daily works such washing clothes, cooking studying
children studying women doing daily work on the PSH	doing launch in the PSH good for other activities
children studying, female washing clothes	effect to the other room be come warmth
children studying, women doing daily works	it is a warm place using for daily activities
children studying, women washing clothes and cooking	it's good place to keep the vegetable
good place for children can play spending time	it's good place we come together in the PSH
cooking, washing clothes	it's useful for health
every activity done here, washing clothes, cooking etc.	it's helpful for health of family member
most our activities we are doing here in the PSH	making warm room, children can studying in the inside
now our children spend most of time in the PSH, it's good they are not getting sick any more	we are using as living room, some time washing clothes cooking children studying here
we use too much from PSH because we didn't have a hall in the house	washing clothes, children doing lessons
my child not going to sick any more	washing clothes, children doing study
female washing clothes and cooking, children doing study	washing clothes, children spending time
generally its very useful for family	washing clothes, cooking, children studying

good extra space for activities	washing clothes, cooking and children studying and playing
good place for activity and children can do here his/ her study	washing clothes, cooking any other daily works women doing on the PSH
good place for children activities	washing clothes, cooking other daily activities doing on the PSH
comfort place during day for children and women activities because on the winter its warm	washing clothes, cooking, children spending more time on the PSH
good place for children they not going out of house spending more time here	washing clothes, uses as studying place
good place for children they are not getting sick any more, women washing clothes here	washing, other daily activities we doing here
good place for children when the weather is sunny	washing, other daily activities cooking, children studying
good place for children, and also good for health	most of the activities we did before on ground now we doing in the PSH
only washing clothes	using as extra space, children spending time here
room is warmer than before didn't have PSH	using as guest house, also good for daily works
some time used for daily works	using as guest room
the children studying here as will cooking and washing	using as guest room, children doing study here
the only things that makes us warmer	using as kitchen room, washing clothes children studying here
the room is warmer than last winter	using as a kitchen room
use as kitchen room	using as living room, children also feeling free on the PSH
use for daily works	using daily work
used as daily works	using only as store
useful for daily activities	using PSH as place for washing clothes, the families member come together spending time here
using as daily work because it's warm and good place for activities	warmer than before
using as daily work women and children	washing clothes
using as dining room	good place guest and children
he's satisfied about Geres works	when weather was warm my relative come we spending time on the PSH its very useful
it is comfortable place for children any other activities	women cooking on the PSH, the free time we come together on
it is good for daily works, and children activities	women doing daily activities on the PSH
we using from PSH for different purposes	good place for washing, children spending time for studying

4.4.4 Impact Summary

Overall conclusion:
The project is creating positive change on a number of levels. In fact, the project delivers beyond the immediate focus of the Project Document in as much as, in addition to delivering substantial benefits for the environment and making a clear contribution to the reduction in levels of household fuel poverty, the project is also stimulating improvements to health, education, the daily lives of women, social relations and household finances. In doing so, the project makes a direct contribution to the reduction of poverty for many vulnerable families.

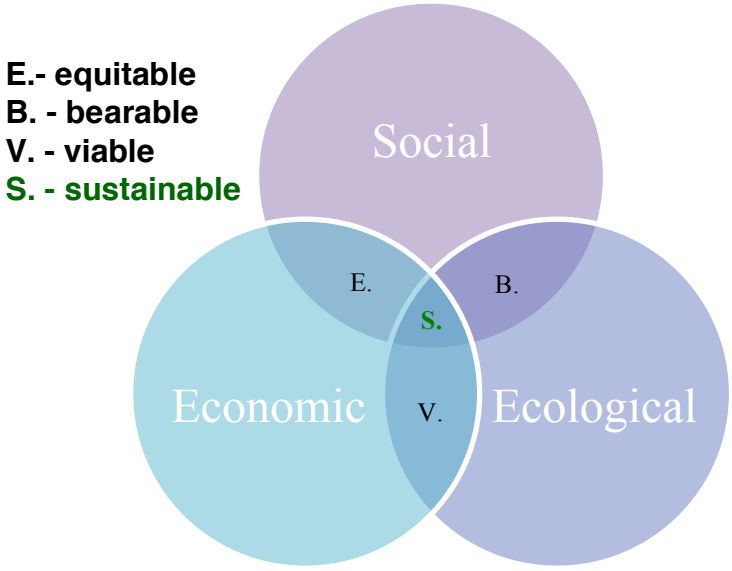
On this basis the evaluator, using the RAG rating system, considers performance to be Green– on the basis that the project fully delivers real, measurable change.



4.5 SUSTAINABILITY

Sustainability *– the likelihood that the positive effects of the project (such as assets, skills, facilities or improve services) will persist for an extended period after the external assistance ends.*

The evaluator has applied a broad notion of sustainability that takes into account social, economic and ecological components - as is depicted on the diagram below. On this basis a sustainable approach is one that balances economic, ecological and social factors, so that it is simultaneously equitable, bearable and viable.



4.5.1 Environmental sustainability

As the sections on project relevance, effectiveness and impact demonstrate the project is well placed to deliver substantial and quantifiable environmental benefits. These include:

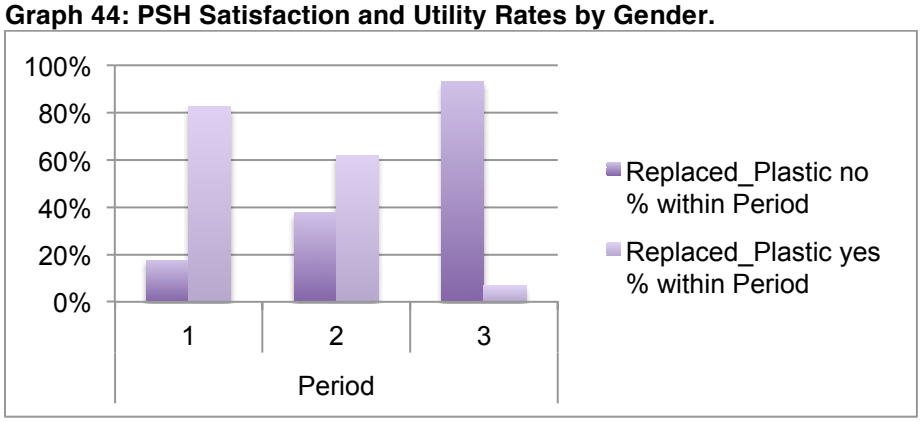
- reducing the demand for winter coal and wood
- reducing the levels of pollutant (PM2.5, PM10) emitted as a result of reductions in wood and coal burning
- improving the energy efficiency of houses, reducing their carbon footprints and life-time operating costs
- increasing understanding of environmental issues among project beneficiaries, and more widely at a community and institutional level, stimulating change toward sustainable consumption and production.

These environmental benefits will persist as long as households are able to afford the cost associated with the maintenance of PSH packages. This however is not guaranteed and as we have seen the cost of maintenance has been problematic for a segment of the market.

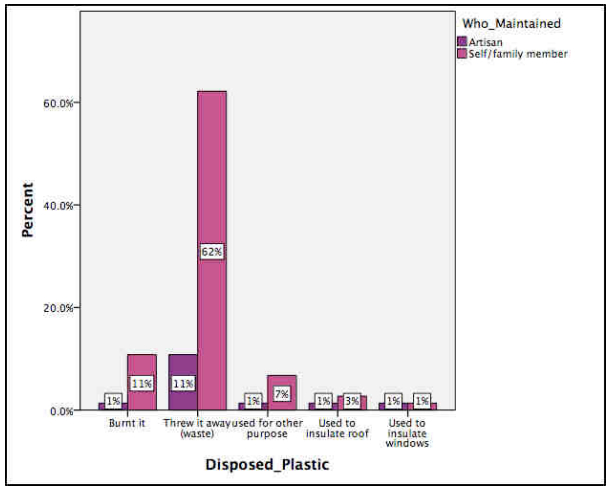
Also of concern is the use of plastic as the covering material for verandas. Plastic coverings do not last for very long, usually for two to three winter seasons. The following graph shows that of

those respondents who had obtained PSH in the first year of the project, 82% have replaced the plastic. For those obtaining PSH in the second year of the project, 62% had replaced the plastic.

Graph 44: PSH Satisfaction and Utility Rates by Gender.



Graph 45: Disposal of Plastic by who Undertook Maintenance.



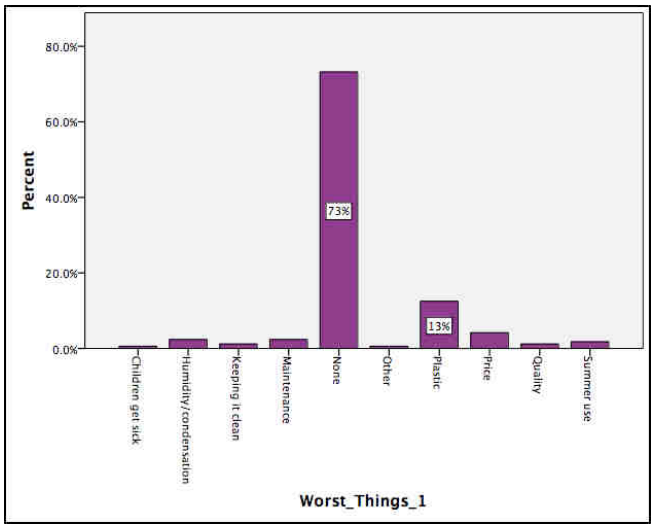
Question: How did you dispose of the PSH plastic?

Once removed Plastic coverings are not being reuse or recycled with any frequency.85% of respondents who had disposed of plastic did so by burning it or throwing it away as waste.

When artisans were contracted to maintain PSH, although plastic was less likely to be thrown away this result was not statistically significant and perhaps indicates that more training and support for the aftersales aspect of the project would be helpful. Additionally, Geres can work to further improve longevity of materials and mechanisms to ensure remedial work is completed cheaply, to a recognised quality.

This being said, the Geres team were well aware of this problem and looking at different ways to encourage re-use - it does however remain an issue to resolve in the future. It should also be noted that Geres have developed and installed a number of metal frame verandas that use glass and or polycarbonate as a replacement for plastic. This version of the veranda also supports energy efficiency and has additional benefits of being aesthetically pleasing, durable and requires less cleaning and maintenance. The draw back however is that it costs more to construct than the wooden, plastic covered verandas, but over the medium terms +5 years it works out cheaper since there are fewer reoccurring maintenance costs.

Graph 46: Worst Aspects of PSH.



Dissatisfaction with plastic covering was, to a small extent, echoed by PSH households. When asked what was the worst thing about PSH the majority 73% said nothing, although plastic was mentioned by 13% of people interviewed.

Question: What are the worst things about PSH (first response)?

4.5.2 Economic Sustainability

The project is delivering a valuable range of economic benefits: improving household finances, income streams and employment for artisans and more broadly along the input supply chain, but can this be sustain beyond the life of the project?

Before the intervention by Geres it is fair to say that energy-saving housing design and construction particularly where related to poorer households was minimal and a PSH value chain was in its infancy if existing at all. Geres' intervention therefore can be seen as a response to market failure. Using a well-targeted and effective approach, Geres has built an emerging value chain by:

- raising community awareness using localised strategies
- developing the skills and capacities of an increasingly strong network of artisan
- providing increasingly adapted, proven and differentiated PSH solutions and building technologies
- stimulating demand for PSH by offering a consumption-based subsidy.

A great deal of Geres' work as outlined above has been robust and will leave in place good capacity to continue. Much of this has already been explored in some detail in preceding sections.

4.5.2.1 Subsidies

The biggest area of concern however was whether the market mechanism for PSH can continue to function without the stimulus of the subsidy.

The findings here are ambiguous:

- During focus group interview several artisans mentioned having already undertaken work in areas outside of the subsidised project area, but at the same time many were worried that there would be little business without a subsidy in place.

- Gere lowered subsidies during the course of the project. Initially, very high subsidies were used to stimulate the market when awareness and demand was very low. Once awareness of PSH grew, subsidies were softened without duly effecting demand. However, as Geres continued to reduce subsidies to low levels (4000 AFT or less) demand drop very significantly.

- During focus groups with Shura members many were clear that subsidies were central to creating demand. One Wakil suggested he had “a list of 50 households in his pocket” that would immediately sign contracts for PSH, if the subsidy was increased back up to 8,000 AFN. However, a number of people also said that as long as PSH was seen as a doner funded NGO project there would be an expectation that PSH should be for free or at the least be subsidised. The implication here was that in the absence of Geres and a subsidy, households may be more inclined to pay the full price for PSH.

- There appeared to be broad consensus among project staff, Shura members and artisans that a subsidy for PSH with verandas of between 6000-9000 AFN would be fair, relatively affordable to a wide range of households and creating sufficient workflow for artisanal businesses to be viable. There appear, however, to be a number of very vulnerable households who could still not afford PSH at this suggested level, likewise wealthier household can afford PSH without subsidy and can more readily invest in the metal and glass/polycarbonate veranda products.

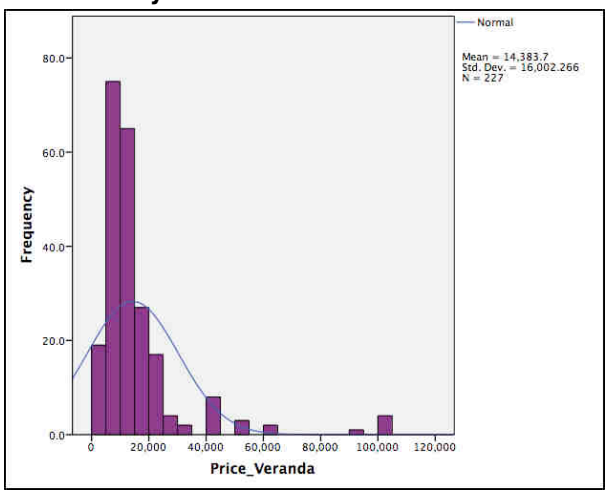
- The surveyors of indirect beneficiaries (for those people living in the three target district who do not already have PSH) showed interviewees pictures of houses with standard PSH verandas. They were then asked to estimate how much they thought they would cost. As the graph below indicates the average cost suggested was approximately 14,400 AFN. This amount was around 4,100 AFN less than the actual cost (18,459) of a veranda without additional insulation, or an underestimation by 22%, this difference increase to 7,510 AFN if compared to veranda packages that include insulation. They were then asked whether they thought, at the price they had suggested, PSH verandas were affordable. This is illustrated in the second graph, with 85% indicating that they had suggested a price that was affordable to them.

Descriptive Statistics

	N	Mean
Price_Veranda	227	14,383.70
Subsidy_Amount	170	7,444.12
Loan_Amount	113	1,676.11

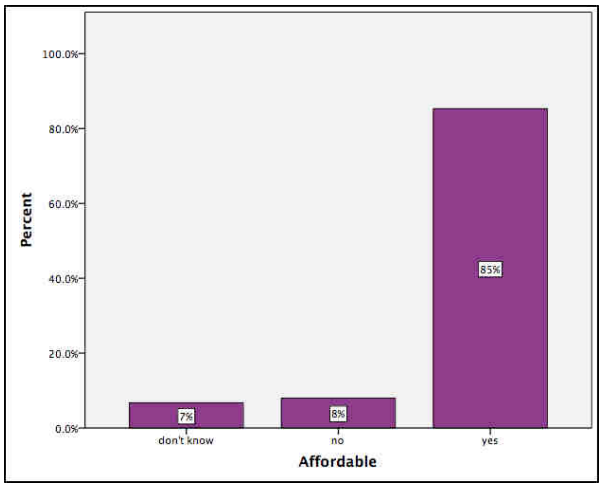
  On this basis it is therefore reasonable to say that the price proposed by respondents reflects more closely what they thought PSH should cost in terms of affordable to them, rather than what they thought the cost on the market would be. Taking this assumption a step further then, the 4,075-7,510 AFN shortfall may then represent the average shortfall in terms of financial affordability rather than necessarily an underestimation of cost.

Graph 47: Price Estimation of Covered Verandas by Indirect Beneficiaries.



Question: What do you think is the price for a covered veranda (shown picture)?

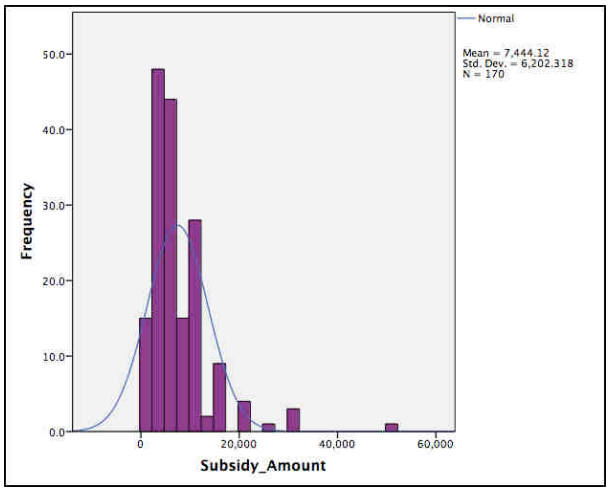
Graph 48: PSH Affordability.



Question: Do you think covered verandas are affordable at the price you suggested?

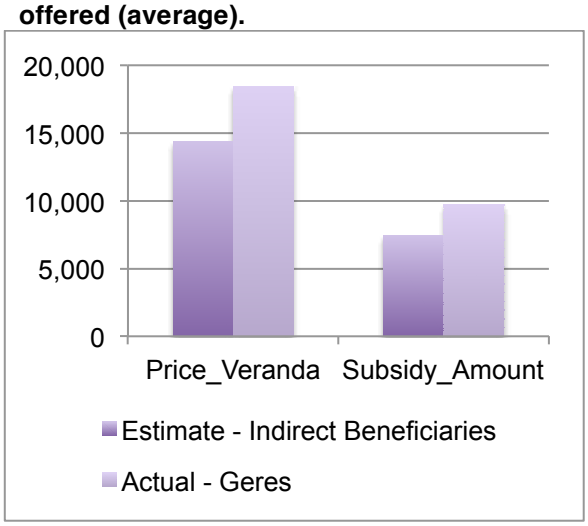
- In addition, the indirect beneficiaries survey asked respondents if they needed a subsidy to purchase PSH and if so, how much of a subsidy they needed. In this respect respondent suggested an average subsidy of 7,444 AGF as indicated in the accompanying graph.

Graph 49: Subsidy Requirements.



Question: What subsidy would you need in order to purchase PSH?

Graph 50: Comparison of estimates of the Price of PSH and Required Subsidy Levels with actual Prices (average) and Subsidies offered (average).



- Interestingly, the average subsidy awarded by Geres for PSH with verandas, over the life of the project, including the initial year where subsidy levels were very generous and required to kick start the market, was 9, 730 AFN.

In drawing the discussion on subsidies to a conclusion, the evaluator is of the opinion that it is unlikely in the current socio-economic context or in the short-term that the market for PSH will function effectively in the absence of a subsidy to promote consumption. It is unlikely that demand will drop off entirely; rather a smaller residual trade will continue that targets wealthier

residents. As a result of this it is likely that there will be some form of consolidation among artisans, with a number choosing to seek alternative income sources.

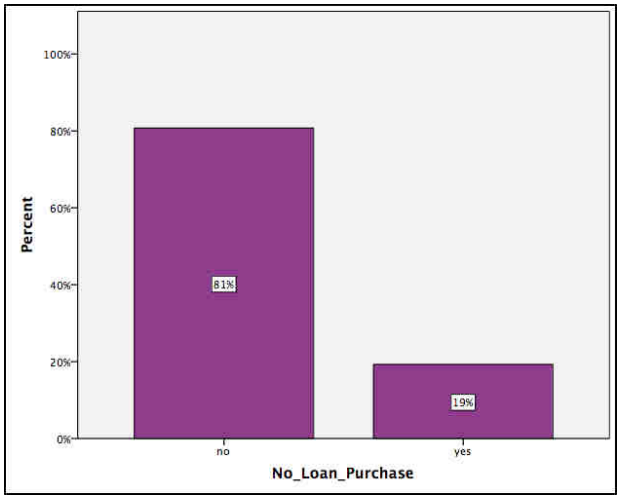
This finding is not an indictment of the sustainability of the project as a whole; it would be wholly unrealistic to assume that it would be possible to create a new and sustainable value chain targeting poor households in such a short period. There are many examples in Europe of green products, including green construction products, requiring some form of market stimulation if they are to break out beyond an appeal to a wealthier and eco-conscious niche markets and start to generate a boarder-based shift towards sustainable consumption. Instead, what this indicates is the need for a long-term sustained effort, on multiple fronts, that build up resilience and sustainability with the PSH value chain and the broader green construction industry including important normative aspects.

4.5.2.2 Loans

The project team are also considering the role of loans or saving schemes as an alternative to subsidies, or to supplement them. The history of micro-finance in Afghanistan has been chequered, with a number of schemes failing to recover lent capital. Moreover loans, depending on how they are structured, accrue interest and as such go against Islamic teachings on usury. Nevertheless there appears to be some level of appetite for loan systems to support purchases of PSH.

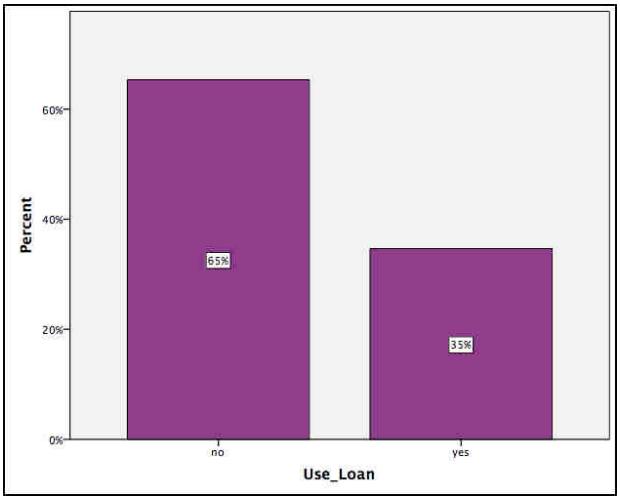
Firstly, the survey of direct beneficiaries found that 35% of households with PSH would have considered taking on a loan to pay for their PSH if there had been no subsidy available. Initially, respondent were asked if they would have purchased PSH themselves if there was no subsidy, in this scenario only 19% indicated that they would. However, when asked in the absence of a subsidy whether they would consider a loan this figure rose to 35%.

Graph 51: Demand for PSH assuming no loan or subsidy.



Question: Would you have consider purchasing a veranda if there was no lone or subsidy?

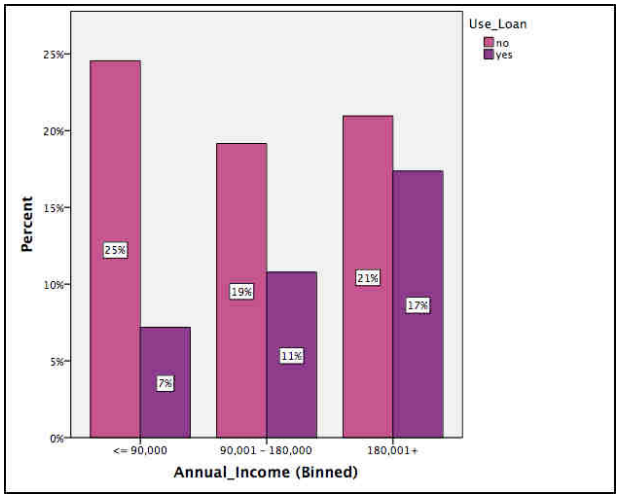
Graph 52: Demand for PSH assuming loan availability.



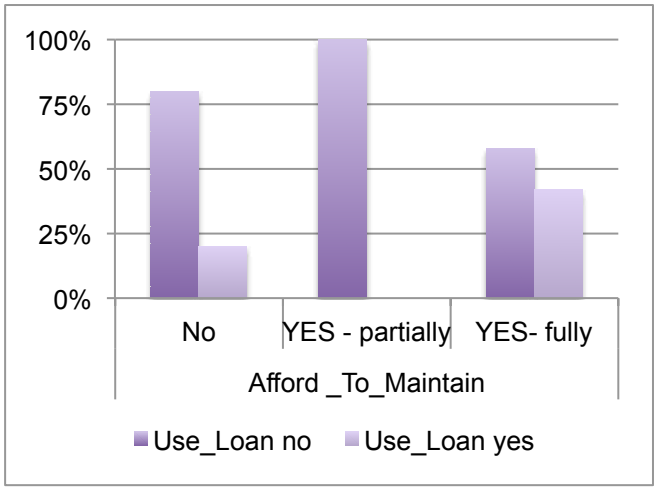
Question: If there was a loan available to purchase a veranda would you have consider this?

The consideration of taking on a loan was linked to household income. The following graph shows that as income levels rise, willingness to consider taking on a loan increase, or put another way, poor households were less likely to consider loans as an option. (Pearson Chi Square, p=0.008; Cramer's V, ϕ_c=0.266 –a moderately strong association.)

Graph 53: Demand for PSH by Annual Household Income Groups.

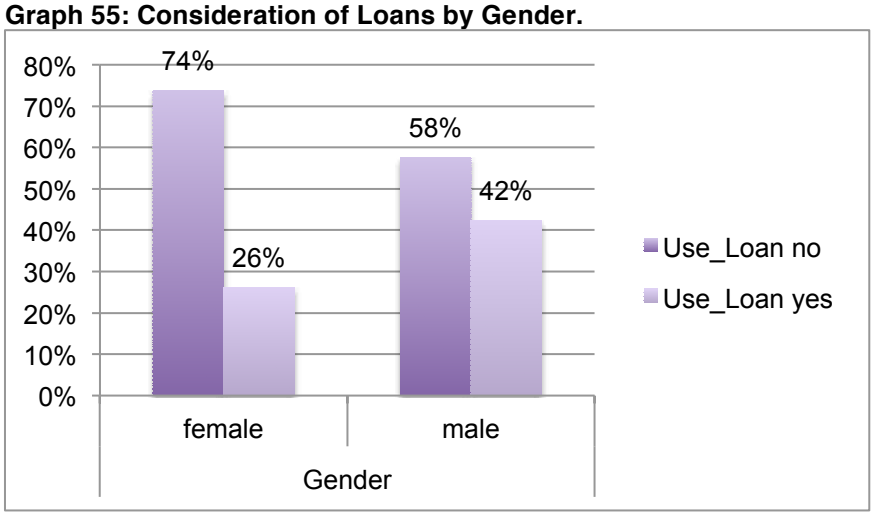


Graph 54: Consideration of Loans by Affordability to Maintain PSH



Similarly there was a moderately strong association between the household's ability to afford PSH maintenance costs and loan consideration (Pearson Chi Square, p=0.003; Cramer's V, ϕ_c=0.274), with those most able to afford maintenance being more open to the consideration of a loan.

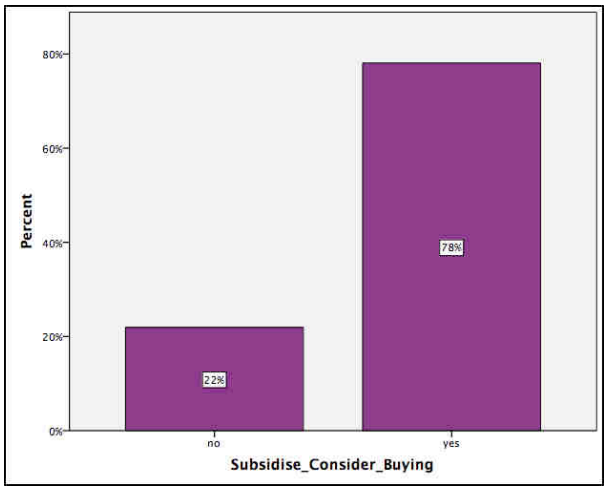
Graph 55: Consideration of Loans by Gender.



Female respondents were most cautious about taking on loans and appear less likely (26%) to consider loans as an option compared to men (42%) but the association was only weak (Pearson Chi Square 2.4; Cramer's V, ϕ_c=0.170).

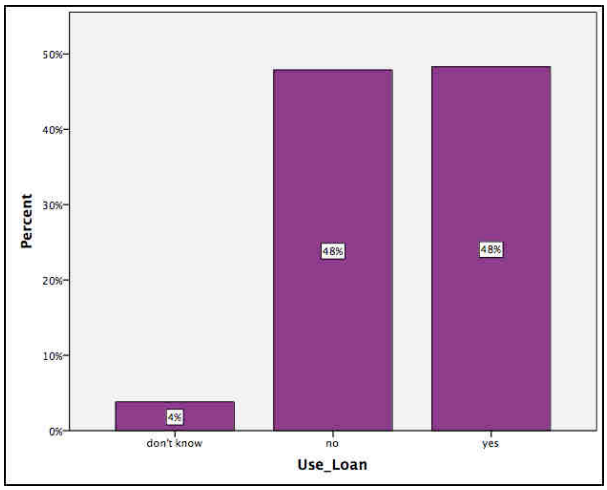
Secondly, the indirect beneficiaries survey asked about the use of loans to finance PSH. Interviewees were asked, once having gained an understanding of the PSH veranda, if they would consider buying one. 78% said they would. Then they were asked if they would consider taking out a loan in order to purchase PSH. In this case 48% said they would, an equal percentage as those who said they would not.

Graph 56: Demand for PSH with Subsidy.



Question: Would you consider purchasing a veranda if there was a subsidy?

Graph 57: Demand for PSH using a Loan.

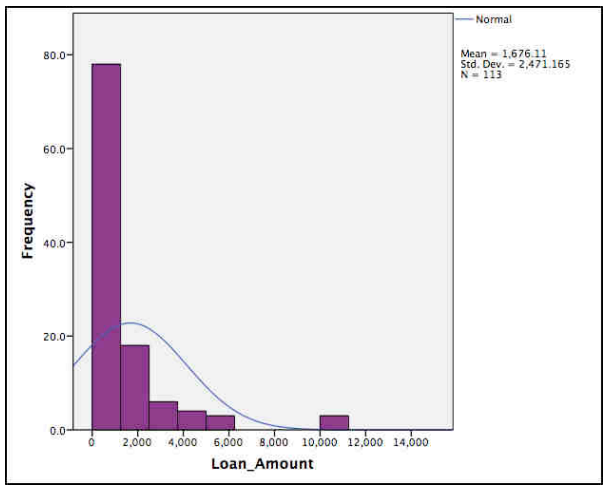


Question: If there was a loan available to purchase a veranda would you consider this?

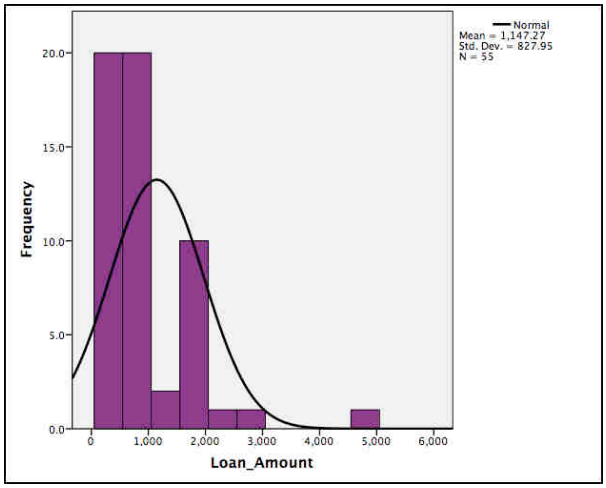
The possibility of using loans and savings mechanisms to support PSH purchase and reduce dependency on subsidies seems warranted, but not as a strategy for the most vulnerable households. The other important point to make about loans is that in theory PSH can be self-financing through the monetary value of energy saving it produces. Geres calculates a Return on Investment of around 5-years. In practice this may be more testing given the extreme pressure on many household budgets.

Both surveys asked respondent who would consider taking on a loan were asked how much they could afford to pay per month to service the loan. The results differ between the two groups with household who already have PSH indicating a lower repayment amount than those who did not have PSH.

Graph 56: Monthly Loan Payment suggested by household that do not have PSH



Graph 57: Monthly Loan Payment suggested by household already having PSH



For Households without PSH *(graph truncated to exclude outliers)*

The average suggested loan repayment was 1,676 AFN, but with 68% of households indicating a monthly loan repayment of 1,000 AFN per month or less (see table below).

Loan_Amount		
		Cumulative Percent
Valid	100	.9
	300	3.5
	400	5.3
	500	31.9
	700	34.5
	800	35.4
	1,000	68.1
	1,200	69.0
	1,500	75.2
	2,000	85.0
	3,000	90.3
	4,000	93.8
	5,000	96.5
	10,000	99.1
	20,000	100.0

Using the mean and assuming no interest is applied or loan administration costs, it would take 11 monthly instalments to pay of the cost of a veranda only package.

For Households With PSH

The average suggested loan repayment was 1,147 AFN, but with 73% of households indicating a monthly loan repayment of AFN per month or less (see table below).

Loan_Amount		
		Cumulative Percent
Valid	300	1.8
	400	5.5
	500	36.4
	1,000	72.7
	1,500	76.4
	2,000	94.5
	2,500	96.4
	3,000	98.2
	5,000	100.0

Using the mean and assuming no interest is applied or loan administration costs, it would take 16 monthly instalments to pay of the cost of a veranda only package.

NB the annual loan repayment in both cases exceeds the average annual saving produced from PSH

To view the question of subsidies and loans in a wider perspective, it is important to note that although affordability remains a challenge to the longer term potential for the market to purchase PSH post-Geres, Kabul communities are already making a substantial investment in the energy efficiency of their homes. The evaluator estimates that currently, for PSH including a veranda only, households have invested a combined amount of over €400,000 in PSH over the life of the project, certainly more than has been spent to subsidise their purchases. To achieve this level of direct investment, say for example, in a neighbourhood upgrading project, is quite unusual especially in the context of Kabul. This direct commitment in itself is a powerful indicator for future sustainability.

4.5.3 Social sustainability

The case for social sustainability is very strong. Proceeding sections have stressed very high levels of community acceptance for PSH as a product and for the working approach of Geres. The social benefits are not the main reason for decisions to install PSH, however the impact on social relations, the work of women, education and health of families help drive strong levels of satisfaction and ultimately to recommending PSH to other households, friends and relatives. The social benefits of PSH will sustain themselves as long as PSH remains in situ. The biggest risk to this, as we have seen, is the cost of maintenance, but certainly not a lack of value placed in the product.

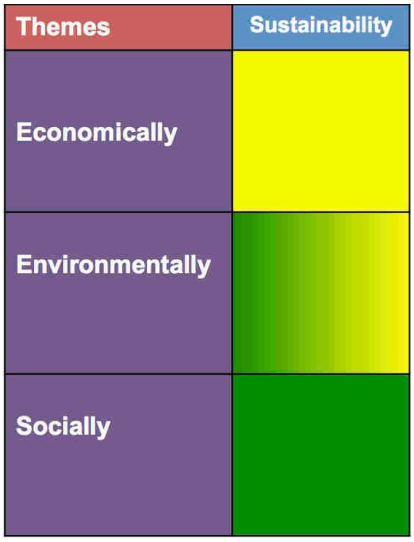
4.5.4 Sustainability Summary

Overall conclusion:

Important progress has been made by the project to ensure sustainability, particularly in terms of the project's environmental and social aspects, however economic sustainability faces some challenges and it is unlikely that the market will function effectively in the short term without subsidising consumer demand for PSH. In addition, environmental sustainability can be secured more fully if a workable solution to the problem of plastic disposal is found. In terms of the project's direct beneficiaries -those households with PSH - the economic, social and environmental gains are likely to remain for the life of the PSH.

The evaluator has every confidence that Geres can meet existing sustainability challenges if a new phase for the project is secured

On this basis the evaluator, using the RAG rating system, considers sustainability to be Amber for economic sustainability, Green/Amber for environmental sustainability and Green for and social sustainability.



5. RECOMMENDATIONS& CONCLUSIONS

5.1 Conclusions

5.1.1 Overall Summative Conclusion

The project has performed excellently across the majority of the five themes of the evaluation: relevance, effectiveness, efficiency, impact and sustainability. The project is having a tangible impact on the environment, on fuel poverty and poverty in general with these outcomes being driven by strong technical PSH products that offer proven energy-efficiency gains. Moreover, the project has delivered against an ambitious programme winning the respect of local communities, civil society organisations and a wide range of stakeholders.

5.1.2 Overall Formative Recommendations

Looking forward, there are two main areas of focus. The first is a real need to continue with the work, the outcomes have been too substantial not to continue. Indeed, there are widespread calls from stakeholders for the project to continue, but at scale (Kabul as a whole or across Afghanistan). To do this however, Geres will need to further develop the emerging value chain, so that it is better able to stand on its own two feet, addressing critical questions of sustainability bringing in a stronger normative aspects to the work.

5.2 Recommendations

The following recommendations are made to support organisational learning and to direct future work on PSH in Afghanistan or further afield. The recommendations are made in order of priority starting with the recommendation that the project should be expanded, working at a significant scale. This has been done using a cursory impact assessment based on the following measures.

Impact measure	Definition
Magnitude	the strength of the impact on the receptor
Likelihood	the probability of the impact occurring
Extent	the geographical or spatial coverage of the impact
Duration	the length of time over which the impact will occur

Ratings are based on the following scales:

Scale	1	2	3	4
Magnitude	Negligible	Minor	Significant	Substantial
Likelihood	Unlikely	Possible	Strong	Definite
Extent	Activity specific	Neighbourhood	District	City/National
Duration	1 year	3 years	5 years	10 years

Since all the recommendations are focused on aspects that will enhance or increase the project's impact, risks have not been considered in detail and the evaluator recommends a full risk assessment, should Geres and its partners wish to pursue these further.

5.2.1 Increase the capacity of the project to work at scale.

If it is not already clear from the body of the report the project warrants expansion at scale since it meets three key requirements:

1. a proven capacity to deliver in a highly complex environment with full support of local stakeholders and the full commitment and support of civil society
2. a proven capacity to deliver meaningful and substantial impact for the environment, but also in terms of broad poverty alleviation goals
3. a large unmet demand.

It is not common, particularly in the demanding Afghanistan context, to find a project that offers such significant returns as efficiently. In Kabul alone, it is not a large step to imagine working with ten thousand households or multiples of that, with the potential to have an impact that would be visible on national level indicator sets.

To work at increased scale will require that Geres undertakes a number of project adaptations to support a larger, more complex operation:

- reduce the overall project costs by reducing and delegating PSH monitoring processes
- reduce the unit cost of PSH provision through further design and application innovations; wherever possible building local capacities to do this
- reduce the international technical support in proportion to local contracting
- strengthen civil society ownership, working more closely with local organisations taking a lead on particular aspects of delivery
- consider how savings and loan schemes (for households or SMEs) can reduce reliance on subsidies for households more able to afford PSH
    - support SMEs grow the PSH market
    - help consumers spread the costs of installing PSH.
    - Build on the excellent project delivery links with Shuras and programme to establish urban Community Development Councils.

Further support the development of the PSH value chain and market mechanisms:

- consider how best to generate and support potential efficiency gains for artisans – in terms of business scale, supply costs, production equipment, etc.
- develop self-help guides and tools for 'do-it-yourself- maintenance and construction of PSH for households wishing to install and maintain PSH themselves.
- consider the possibility of creating greater supply efficiency through a bulk purchase scheme linked to the artisan's association and the loan scheme mentioned above.
- develop a differentiated approach to the market in terms of the pricing and marketing of low and high value PSH products:
- target future subsidies to support only the most vulnerable households trying to avoid the need for a complex system of means testing
- seek longer term funding commitments supporting a five year programme of action to allow for a realistic timeframe to develop the PSH market mechanism.

Impact measure	Working at Scale - Rating
Magnitude	4
Likelihood	4
Extent	4
Duration	3
Total	**15**

5.2.2. Strengthen the normative aspect of the project in line with a maturation of the value chain.

This might include:

- the adoption government standards or local ordinance PSH and its application, allowing for 'green labelling' or certifications of artisans who work to these standards
- building local government capacity in the application and controls of PSH construction
- anchoring and facilitate the handover of PSH training within the Technical and Vocational Education and Training sector in order to reduce reliance on Geres training programmes
- strengthening local government's role in the promotion of PSH.

Impact measure	Working at Scale - Rating
Magnitude	3
Likelihood	3
Extent	4
Duration	4
Total	**14**

5.2.4. Find sustainable solutions for reusing or recycling plastic and building the systems and mechanisms to achieve this.

Impact measure	Working at Scale - Rating
Magnitude	3
Likelihood	2
Extent	4
Duration	3
Total	**12**

5.2.5 Encourage new buildings to include PSH as a cost effective way to expand the building envelop and to improve energy efficiency; working with:

- architectural firms in the development of standard technical drawings for metal frame verandas for the private market
- planning and housing authorities responsible for public housing, public building and urban upgrading.

Impact measure	Working at Scale - Rating
Magnitude	3
Likelihood	2
Extent	3
Duration	3
Total	**11**

5.2.6. Improve knowledge of sustainable consumption and production by:

- Introducing a public campaign promoting sustainable consumption and production working, in particular, with schools.
- Arranging study tours, workshops, etc. for key representatives of government, business and civil society.

Impact measure	Working at Scale - Rating
Magnitude	2
Likelihood	3
Extent	4
Duration	2
Total	**11**

6. ANNEXES

ANNEX A – Interview& Meeting Schedule

Activities
Nicolas Fruh –Geres Programme Coordinator
Mohammad Riaz Ramin – Geres Technical Coordinator/PMA
Olivier Munos – Geres Technical Advisor - Team leader
Camille Le Bloa – Geres Banyan
Dr. Holly A Ritchie - Lecturer in 'Gender in Fragile Environments', Leiden University, The Hague, NL
Geres Fieldwork Team
Geres Research and Development Team
Geres Marketing and Communications Team
Geres Monitoring and Evaluation Team
Focus Group 1 – SMEs/Artisans District 5
Focus Group 2 – SMEs/Artisans District 7 (led by Shamsia Noori)
Focus Group 3 – SMEs/Artisans District 8 (led by Shamsia Noori)
Focus Group 4 – Demo/Shura District 5 (led by Shamsia Noori)
Focus Group 5 – Demo/Shura District 7 (led by Shamsia Noori)
Carol Lecaille – Geres Support Services Advisor
Self-assessment workshop – full Geres team
Solidarite Afghanistan Belgique – Dr. Mohamed Rafiq Sharifi
Kabul Municipality – Foreign Relations Manager – Mayar Mohammed Isa
UN-Habitat - Matthew French
Ministry of Energy and Water – Energy Policy Director – Eng. Malalai Barakzai
Agence Francaise de Developpement (AFD) – Country Director – Jocelyn Leveneur
Agence Francaise de Developpement (AFD) – Country Deputy Director – Pascal Brouillet
The Linda Norgrove Foundation – Programme Manager – Doulat Bibi Aliyar

ANNEX B - Source Documentation

#	Details
1	Welcome guide to Afghanistan - GERES
2	Summary of GAF specific security measures – GERES
3	Project logical framework
4	Country security guide for Afghanistan - GERES
5	Kidnapping briefing paper – GERES
6	Promoting GERES PSH and working with craftsmen in Afghanistan
7	SPSS for Psychologists- Kemp & Snelgar
8	Research methods - Sapsford
9	Project databases – PSH, demonstration houses, SMEs, etc.
10	Local stakeholder consultations meeting report - GERES
12	Inauguration of demonstrations PSH – event report -GERE
13	The ValueLinks Manual- GTZ
14	Contracts and MOUs – GERES demonstration phase in D5,7,8 winter and summer – activity report - GERES
15	Kabul winter monitoring report
16	Value chain development for decent work – International Labour Office
17	SEADEP final report - GERES
18	Satisfying basic needs respecting the earth limits – understanding poverty challenges through sustainable consumption and production thinking – Switch Asia
19	Eco—entrepreneurship – strategies and experiences from the Switch Asia program
20	Project evaluation: energy efficiency in private housing to improve conditions of populations in Afghan cold regions (Bamyan) – Samuel Hall
21	Sustainable supply chain initiatives – strategies and lessons learned from the Switch Asia program
22	Engaging with consumers towards sustainable consumption – strategies and experiences from the Switch Asia program
23	Project interim report - GERES
24	Organisational chart – GERES Afghanistan
25	Afgha-Taj project marketing strategy – baseline survey
26	DFID - Guidance on using the revised logical framework
27	UNESCO – Guidelines for inception reports
28	Australian Government -DAFT monitoring and evaluation standards
29	Making evaluations matter: a practical guide for evaluators
30	Subsidy policies - GERES
31	Marketing strategy focus group discussion reports
32	Awareness, marketing and promotional materials
33	Competitive Strategy – Michael. E. Porter
33	Project activity plan –GERES
34	Geres Switch Asia Concept Note
35	Final Draft Afghanistan national Renewable Energy Policy 2015
36	Afghanistan's Urban Future – UN-Habitat
37	Urban Solidarity – community-led neighbourhood upgrading – UN-Habitat
38	Visit Books in demonstration sites – summer 2
39	Visit Books in demonstration sites – winter 1
40	Geres Meeting Minutes
41	Burden of disease from Household Air Pollution for 2012 - WHO
42	WHO - Ambient Air Pollution in Cities Database (2014)
43	UNDP – Afghanistan Annual Report – 2013
44	Common Country Assessment for the Islamic Republic of Afghanistan – United Nations
45	Carbon Trust web site (http://www.carbontrust.com)
46	US Environmental Protection web site (http://www.epa.gov)

ANNEX C–Focus Group Discussion Frameworks

FOCUS GROUP QUESTIONING OUTLINE
Focus Group Description: Geres SMEs/Artisans/Business Associations
AIM
To better understand the impact of the project on the businesses of participating artisans and the effectiveness and sustainability of project interventions.
Target Group Size 5-8 (active) participants
QUESTION 1
Describe the current nature of your business? (asked to each participant)
Follow-up/Probe (where necessary)
• Number of employees
• Storage issues
• Business premises?
• Equipment and machinery
• Impact of varying subsidy levels
• Volume of business/sale/customers
• Profitability
• Competition
• Non-Geres work (out of area or other products)
• Customer satisfaction
QUESTION 2 (for group discussion)
How has business changed since working with Geres?
Follow-up/Probe (where necessary)
• Change in sales volume/profitability
• Skills and knowledge
• Access to technology
• Support received (training, etc.)
• Change in employment
• Application of new skills in wider business activities
• Quality and maintenance of product

QUESTION 2 (for group discussion)
How will business in the future be without Geres?
Follow-up/Probe (where necessary)
• Is PSH sustainable?
• Market demand?
• Loans?
• Value of business associations
• Approach to marketing 'on their own'?
• Role of wider factors: economic/security?
QUESTION 3 (for group discussion)
What do you feel about working with and support received from Geres?
Follow-up/Probe (where necessary)
• Skills and knowledge
• Access to technology
• Support received (training, etc.)
• Quality of training
• Quality of products (PSH)
• Marketing and business support

FOCUS GROUP QUESTIONING OUTLINE
Focus Group Description: SHURA
AIM
To better understand the role played by Shura (local committees) in the delivery of the project and their understanding of energy saving/environmental issues, as well as to gauge their views as to the strengths and weaknesses of the project/PSH and opportunities to improve.
Target Group Size 5-10 (active) participants
QUESTION 1
Why is energy-saving important?
Follow-up/Probe (where necessary)
• Environmental impact
• Financial impact
• Health, education, other social impacts

QUESTION 2 (for group discussion)
What are your views about Geres' PSH packages and implementation?
Follow-up/Probe (where necessary)
• Strengths and weaknesses
○ Quality
○ Energy saving efficiency
○ Social impact
○ Durability/Maintenance
○ Skills of artisans
○ Subsidy….
QUESTION 3 (for group discussion)
How have you worked with Geres?
Follow-up/Probe (where necessary)
• Strengths and weaknesses
• Training?
• Promotional materials
• Presentations/explanations/public meetings
• Follow-up/communication
• Comparison with other NGOs/project?
QUESTION 4 (for group discussion)
How has the shura help to market/raise awareness about PSH and energy saving?
Follow-up/Probe (where necessary)
• What other methods would be useful
• How successful has this been
• What are the major issues about PSH for community (cost, quality, maintenance, subsidy….)
• What works best
• Value of demonstration houses
QUESTION 5 (for group discussion)
Do you think PSH can continue without Geres?
Follow-up/Probe (where necessary)
• What would help sustain the work?
• Are loans a possibility?
• Are the packages affordable without the subsidy and to whom?

ANNEX D – Survey Questionnaires Direct Beneficiaries

RESEARCH PROPOSAL

Client:
GERES
Project:
PSH Afghanistan
Research Type:
Quantitative Survey 1: Direct Beneficiaries

Introduction and Rationale

Issue Urban is conducting the final evaluation of GERES Passive Solar Houses (PSH) project in Afghanistan. PSH use a combination a veranda (wooden frame or metal frame) and insulation techniques such as double-glazing and roof insulation.

The project, running for 40 months, is implemented in an urban setting in districts 5, 7, and 8 of Kabul. It aims to improve population living conditions, promote urban economic development and fight against natural resource degradation. It encourages the wide dissemination of energy-saving technologies, equipment, and practices, through market mechanisms, empowering local production & commercial networks and capacities.

In undertaking the evaluation Issue Urban is required to assess the relevance, effectiveness, efficiency and impact of the work, whilst considering longer-term sustainability and documenting lessons learned that will support the possibility to extend or replicate the activities in other contexts.

As one part of the overall evaluation, the need for a quantitative structured household survey has been identified as an appropriate method to explore the emerging impact on Direct Final Beneficiaries. A separate survey will explore the potential wider benefits for Indirect Final Beneficiaries should the developed PSH technologies be adopted more broadly.

Project beneficiaries are defined as follows:

- Direct Final Beneficiaries - people living in the households equipped with PSH technologies.
- Indirect Final Beneficiaries of the project are the 866,600 inhabitants of districts 5, 7 and 8 in Kabul.

Research Aim (Hypothesis)

The primary aim of the research is to explore whether PSH technologies improve the economic, living and social conditions of households in terms of reduced energy bills, comfort, health, education and social interactions.

In doing so, research will explore:

- the impact of different PSH packages
- the impact of different subsidy levels
- maintenance, quality and longevity of PSH packages
- activities and uses associated with of PSH

- PSH promotion and affordability.

Methods and Fieldwork
The approach to fieldwork and design of the questionnaire (survey instrument) needs to be cognisant of a number of important specific issues and considerations:

- access to homes and related gender considerations
- education levels of respondents and complexity of the survey
- the prevailing security situation in the city
- limited time and resources available to complete the fieldwork
- complex multi-family households
- limited information regarding financial matters available to non-heads of households.

In addition, standard research issues and considerations will apply such as confidentiality, methodological and epistemological constraints, memory effects and sample bias.

The questionnaire will be designed, where possible, to facilitate comparability with the project's Baseline Survey and Winter Monitoring report. These research documents provide valuable information regarding the practices of beneficiaries prior to project implementation as well as providing an assessment of the energy savings associated with standard PSH packages and related behaviours and attitudes.

The questionnaire will be administered by fieldworkers (mixed gender, two-person teams) and is intended not to take longer than 30 minutes. The questionnaire will be structured, with the majority of the questions being closed (pre-coded). A decision will be taken as to whether telephone interviews can used too.

A draft survey in English is included in **Appendix A**, to be finalised and translated in collaboration with the project team.

Sampling
The sample will be drawn from the project's list of Direct Final Beneficiaries – those receiving PSH as well as those contracting for the service, but later cancelling. A shortened and adapted questionnaire being administered to the latter group (see **Appendix B**).

Only Direct Final Beneficiaries residing in the project areas (Districts 5,7 & 8) will be sampled.

The response rate is expected to be high, given the familiarity of households with the work of GERES, the availability of mixed-gender fieldwork teams and the likelihood that a relevant member of the household will be present at the home. Nevertheless, a randomised sample of 200 household respondents will be drawn, with the expectation that only 160 surveys will be complete given the possibility of refusals and unavailability of suitable household respondents.

Geres have supported 3169 Direct Final Beneficiaries. Of these a few reside outside of the target district, so have been discounted, leaving a sample frame of 3,119. This number includes those households who contracted PSH packages, but whom may have cancelled at a later stage. As such 160 respondents represents 5% of the sample frame.

Once drawn the sample will be assess to ensure sufficient coverage of key variables (year of delivery, PSH packages, subsidy levels, geographic spread, etc.). Where there is insufficient representation additional respondents will be sampled.

Ideal targets are set as follows:

Variable	Ideal minimum responses
Periods 1	30
Periods 3	30
Districts 7	40
Districts 8	40

Packages	20 *
Subsidies of 25% or less	20

* meeting the minimum target for roof insulation may not be practical and will remain under review.

Analysis

Efforts to approach randomisation should ensure survey reliability and limit bias. As such and within the constraints of a relatively small sample, data should be open to analysis by cross tabulation using SPSS to apply a number of appropriate statistical tests.

Timeline

Task	Resource Requirements	2 week Inception Period	3 week Field Work Period	2 week Reporting Period
Survey finalisation	RR GERES team			
Survey translation	GERES team			
Field training and piloting	RR Field team			
Fieldwork and monitoring	2 x field teams (2-person)			
Data capturing and cleansing	RR Field team			
Analysis	RR			

Appendix A
Draft Questionnaire – Direct Beneficiaries (contracts not cancelled)

Introductory information			
Head of household?		Gender?	
Yes	No	Male	Female
If not Head of Household, what is your role			
Number of people living in household?		Number of Families in household?	
Number of Children? *(Age less than 15. Check numbers tally)*		Number of Adults? *(Check numbers tally)*	
How many winters spent with PSH? *(please circle)*	1st	2nd	3rd

Q1	How did you find out about PSH? *(please number in order stated, prompt for second response if needed)*	
1a	Wakil	
1b	Shura	
1c	Demonstration meeting	
1d	Posters	
1e	Brochure	
1f	Artisan	
1g	Other	
1h	Other	

Q2	What made you decide to get PSH? *(please number in order stated, prompt for second response if needed)*	
2a	Price	
2b	Subsidy	
2c	Energy saving	
2d	Extra space	
2e	Demonstration/ PSH House	
2f	Extra warmth	
2g	Other	
2h	Other	

Q3	Are you satisfied with the PSH? **READ OUT OPTIONS** *(please tick)*									
3a		3b		3c		3d		3e		
Very Satisfied		Satisfied		Average		Not Satisfied		Very Unsatisfied		

Q4	What are the best things about PSH? *(please number in order stated, prompt for second response)*	
4a	Subsidy	
4b	Quality	
4c	Energy saving	
4d	Extra space	
4e	Extra warmth	
4f	None	
4g	Other	

Q5	What are the worst things about PSH? *(please number in order stated, prompt for second response)*	
5a	Price	
5b	Quality	
5c	Keeping it clean	
5d	Summer use	
5e	Plastic	
5f	Maintenance	
5g	None	
5h	Other	

Q6	Is your house warmer now you have PSH? **READ OUT OPTIONS** *(please tick)*									
6a		6b		6c		6d		6e		
Much Warmer		Warmer		The same		Colder		Much Colder		

Q7	Does the household use more or less heating fuel because of PSH than in the past? *(please tick)* **READ OUT OPTIONS**									
7a		7b		7c		7d		7e		
A lot less		Less		The same		More		Much more		

Q8	How useful is the PSH?) *(please tick)* **READ OUT OPTIONS**									
8a		8b		8c		8d		8e		
Very useful		Useful		Average		Not useful		Very unuseful		

Q9	Why is the PSH useful/not useful? *(please number in order stated, prompt for second response)*		
9a	Warmth		
9b	Saves money		
9c	Provides extra space		
9d	Productive space (income generating)		
9e	Good for family activities		
9f	Washing clothes		
9g	Educational uses		
9h	Other		
9i	Other		

Q10	*(GH, GH+ only)* What do you do with the extra space? *(please number in order stated, prompt for second response)*		For how many hours a day on average is the veranda used?	
10a	Children activities			
10b	Washing			
10c	Cooking			
10d	Guests			
10e	Handcrafts/Sewing			
10f	Business/Workshop			
10g	Nothing			
10h	Other			
10i	Other			

Q11	Do you use the Veranda for educational, training or community purposes? *(GK, GK+ only) (please number in order stated, prompt for second response) (please circle)*		
11a	YES	11b	NO
Q12	If YES, what? *(please number in order stated, prompt for second response) (please circle)*		
12a	Homework		
12b	Lessons for children		
12c	Training for adults		
12d	Workshops		
12e	Meetings, discussions		
12f	Other		
12g	Other		

Q13	Who uses the veranda most? **READ OUT OPTIONS** *(Please circle) (GK, GK+ only)*				
13a	Men	13b	Women	13c	Don't Know
13d	Kids	13e	Adults	13f	Don't Know

Q14	Are the children doing better at school since you got PSH? *(please circle)*		
14a	YES	14b	NO
Q15	If YES, why? *(please number in order stated)*		

15a	Spend more time studying		
15b	Less school time lost through illness		
15c	Easier to get children out of bed in the morning?		
15d	Other		
15e	Other		

Q16	Now that you have PSH, do the children bath more or less often in the winter? **READ OUT OPTIONS** *(please circle)*						
16a	More	16b	Less	16c	The same	16d	Don't know

Q18	In winter, how many times per week do you bath your children?	

Q19	In winter, how many times per week do you wash clothes?	

Q20	Now that you have PSH, does the household visit the doctor or health centre more or less often? **READ OUT OPTIONS** *(please circle)*						
20a	More	20b	Less	20c	The same	20d	Don't know

Q21	Now that you have PSH, does the household spend more or less money on medicine for illnesses such as coughing, joint pains, sneezing, flu and colds? **READ OUT OPTIONS** *(please circle)*						
21a	More	21b	Less	21c	The same	20d	Don't know

Q22	During the winter, how much money do you think the household saves as a result of PSH? *(NB reduced expenditure on heating) (tick or complete)*		
22a	Per week		
22b	Per month		
22c	Per winter		
22d	Don't Know		

Q23	Now that you have PSH, how much wood and coal do you buy for the winter for heating and cooking? **READ OUT OPTIONS**			
23a	Wood		Unit	
23b	Coal		Unit	

Q24	Before you had PSH, how much wood and coal did you buy for the winter for heating and cooking? **READ OUT OPTIONS**			
24a	Wood		Unit	
24b	Coal		Unit	

Q25	This year, did you have any difficulties to meet your fuels needs? *(please circle)*		
25a	Yes	25b	No

Q26	If yes, how serious was this? **READ OUT OPTIONS** *(please circle)*				
26a	Very Serious	26b	Serious	26c	Not Serious

Q27	If you save money because of PSH, how do you use this money? *(please number in order stated, prompt for second response)?*		
27a	Paying debts		
27b	Food		
27c	Health care/ medicine		
27d	Education		
27e	Extra fuel for cooking or heating		
27f	Transport		
27g	Clothing		
27h	Don't Know		
27i	Other		
27j	Other		

Q28	If there was no subsidy, but you were offered a loan instead would you still have considered buying PSH? *(from an MFI, if asked)*		
28a	YES	28b	NO
If YES, how much could you afford to pay per month?			

Q29	If there was no subsidy or available loan, would you have still considered buying PSH? *(please circle)*		
29a	YES	29b	NO
Q30	If YES, how would you have paid for it?		
30a	Savings/Saved		
30b	Family member/relative		
30c	Money (informal loan) from friend		
30d	Don't know		
30e	Selling something		
30f	Saving up		
30g	Other:		

Q31	Other than saving money, has anything else improved as a result of PSH? *(please number in order stated, prompt for **second** response)?*		
31a	Family relations		
31b	Health of family		
31c	Housework		
31d	Privacy		
31e	Child care		
31f	Studying		
31g	Social standing		
31h	Other		
31i	Other		
If so, please explain why/how?			

Q32	Would you recommend PSH to someone else? *(Please circle)*		
32a	YES	32b	NO

Q33	Have you recommended PSH to someone else? *(Please circle)*		
33a	YES	33b	NO

Q34	Are you happy with the quality of the PSH? *(please number in order stated, prompt for second response if needed)*		
34a	YES	34b	NO

Q35	If NO, what should be improved?		
35a	Design		
35b	Maintenance		
35c	Workmanship		
35d	Durability/Lifespan		
35e	Look (aesthetic)		
35f	Materials		
35g	Poor energy (heat) performance		
35h	Other:		
35i	Other:		

Q36	Would you consider installing other PSH packages to this house? (Veranda, roof insulation, double glazing, combination) *(please circle)*		
36a	YES	36b	NO

Q37	If YES, which option/s?	
37a	Option 1	
37b	Option 2	
Q38	If No, why not?	
38a	Too expensive	
38b	Don't know about them	
38c	Unaffordable	
38d	Wont work/Doesn't work	
38e	Other:	
38f	Other:	

Q39	What problems have you had with the PSH? *(please number in order stated)?*	
39a	None	
39b	Hard to clean/ Dirty	
39c	Changing between summer and winter use	
39d	Summer use	
39e	Damaged by animals/ children	
39f	Damaged by weather (wind, rain, snow, sun)	
39g	Doesn't look nice	
39h	Too expensive	
39i	Other:	
39j	Other:	

Q40	Have you spent any money maintaining or repairing your PSH? *(Please circle)*		
40a	YES	40b	NO
Q41	If YES, how much per year?		
41a	This year		
41b	Last year		
Q42	If YES, who did the work for you? *(please circle)*		
42a	Artisan		
42b	Self/family member		

Q45	Can you afford to maintain your PSH? **READ OUT OPTIONS** *(please circle)*				
45a	YES- fully	45b	YES - partially	45c	No

Q43	(GK GK+ Only) Have you had to replace the PSH plastic sheeting? *(Please circle)*		
43a	YES	43b	NO
Q44	If YES, what did you do with the old plastic? *(please circle)*		
44a	Threw it away (waste)		
44b	Used to insulate windows		
44c	Used to insulate roof		
44d	Burnt it		
44e	Other:		

Q46	What is the annual income of the household?		
Q47	Source of Income? **READ OUT OPTIONS**	Monthly income?	How many months per year do you get this income?
47a	Agriculture and livestock (sale of own production)		
47b	Manufacturing (handcrafts etc.)		
47c	Services		
47d	Construction		
47e	Public sector		
47f	Cash transfers from family members		
47g	Rent income		
47h	Other:		
47i	Other:		

Q48	Does PSH help you generate additional income? *(GK, GK+ only) (please circle)*		
48a	YES	48b	NO

Q49	If YES, how does it help generate income?	
49a	Renting out space	
49b	Manufacturing	
49c	Holding business/sales meetings	
49d	Income generation activities for women	
49e	Storage of business equipment/products/materials	
49f	Greenhouse vegetables	
49g	Other:	
49h	Other:	

Appendix A
Draft Questionnaire – Direct Beneficiaries (contracts cancelled)

Introductory information			
Head of household?		Gender?	
Yes	No	Male	Female
If not Head of household, what is your role			
Size of household?		Number of Families in household?	
Number of Children? *(Age less than 15. Check numbers tally)*		Number of Adults? *(Check numbers tally)*	

Q1	How did you find out about PSH? *(please number in order stated, prompt for second response if needed)*	
1a	Wakil	
1b	Shura	
1c	Demonstration meeting	
1d	Posters	
1e	Brochure	
1f	Artisan	
1g	Other	
1h	Other	

Q2	What made you decide to get PSH initially? *(please number in order stated, prompt for second response if needed)*	
2a	Price	
2b	Subsidy	
2c	Energy saving	
2d	Extra space	
2e	Demonstration/ PSH House	
2f	Extra warmth	
2g	Other	
2h	Other	

Q3	Why was the contract cancelled? *(please number in order stated, prompt for second response)*	
3a	Lack of money	
3b	Couldn't arrange loan	
3c	Let down by money lender	
3d	Not satisfied with product/package	
3e	Not satisfied with/couldn't find an artisan	
3f	Concerned about maintenance	
3g	Concerned about summer use	
3h	Had other needs/expenses to attend to	
3i	Didn't think it would work/save money/save energy	
3j	Not satisfied with GERES	
3k	Put off by Demonstration House or other PSH home	
3l	No follow-up from the artisan	
3m	Conflict with the artisan	
3n	Extra-cost request by the artisan	
3o	Too expensive	
3p	Not strong enough/poor quality	
3q	Not attractive/pleasant to look at	
3r	Associated with lower class people	
3s	Don't need any extra space	
3t	Saving money first	
3u	Was treated badly	
3v	Other	
3w	Other	

Q4	What are the best things about PSH? *(please number in order stated, prompt for second response)*		
4a	Subsidy		
4b	Quality		
4c	Energy saving		
4d	Extra space		
4e	Extra warmth		
4f	None		
4g	Other		

Q5	What are the worst things about PSH? *(please number in order stated, prompt for second response)*		
5a	Price		
5b	Quality		
5c	Keeping it clean		
5d	Summer use		
5e	Plastic		
5f	Maintenance		
5g	None		
5h	Other		

Q6	*(GH only)* What would you have done with the extra space? *(please number in order stated, prompt for second response)*		
6a	Children activities		
6b	Washing		
6c	Cooking		
6d	Guests		
6e	Handcrafts/Sewing		
6f	Business/Workshop		
6g	Nothing		
6h	Other		
6i	Other		

Q7	In winter, how many times per week do you bath your children?	

Q8	In winter, how many times per week do you wash clothes?	

Q9	During the winter, how much money do you think the household might save if it completed the PSH? *(NB reduced expenditure on heating) (tick or complete)*	
9a	Per week	
9b	Per month	
9b	Per year	
9c	Don't Know	

Q10	How much wood and coal do you buy for the winter for heating and cooking? **READ OUT OPTIONS**			
10a	Wood		Unit	
10b	Coal		Unit	

Q11	If you had completed PSH, how much wood and coal do you think the household would need to buy for winter heating and cooking? **READ OUT OPTIONS**			
11a	Wood		Unit	
11b	Coal		Unit	

Q12	This year, are you having any difficulties to meet your fuel needs? *(please circle)*		
12a	Yes	12b	No

Q13	If yes, how serious is this? **READ OUT OPTIONS** *(please circle)*				
13a	Very Serious	13b	Serious	13c	Not Serious

Q14	If you had PSH and saved money because of it, how would you use this money? *(please number in order stated, prompt for second response)?*		
14a	Paying debts		
14b	Food		
14c	Health care/ medicine		
14d	Education		
14e	Extra fuel for cooking or heating		
14f	Transport		
14g	Clothing		
14h	Don't Know		
14i	Other		
14j	Other		

Q15	If you were offered a loan would you reconsidered buying PSH? *(from an MFI, if asked)*		
15a	YES	15b	NO
If YES, how much could you afford to pay per month?			

Q16	Would you recommend PSH to someone else? *(Please circle)*		
16a	YES	16b	NO

Q17	Have you recommended PSH to someone else? *(Please circle)*		
17a	YES	17b	NO

Q18	What is the annual income of the household?		
Q19	Source of Income? **READ OUT OPTIONS**	Monthly income?	How many months per year do you get this income?
19a	Agriculture and livestock (sale of own production)		
19b	Manufacturing (handcrafts etc.)		
19c	Services		
19d	Construction		
19e	Public sector		
19f	Cash transfers from family members		
19g	Rent income		
19h	Other:		
19i	Other:		

ANNEX D – Survey Questionnaires Indirect Beneficiaries

RESEARCH PROPOSAL

Client:
GERES
Project:
PSH Afghanistan
Research Type:
Quantitative Survey 2: Indirect Beneficiaries

Introduction and Rationale
Issue Urban is conducting the final evaluation of GERES Passive Solar Houses (PSH) project in Afghanistan. PSH use a combination a veranda (wooden frame or metal frame) and insulation techniques such as double-glazing and roof insulation.

The project, running for 40 months, is implemented in an urban setting in districts 5, 7, and 8 of Kabul. It aims to improve population living conditions, promote urban economic development and fight against natural resource degradation. It encourages the wide dissemination of energy-saving technologies, equipment, and practices, through market mechanisms, empowering local production & commercial networks and capacities.

In undertaking the evaluation Issue Urban is required to assess the relevance, effectiveness, efficiency and impact of the work, whilst considering longer-term sustainability and documenting lessons learned that will support the possibility to extend or replicate the activities in other contexts.

As one part of the overall evaluation, the need for a quantitative structured street-level survey has been identified as an appropriate method to explore the emerging impact on Indirect Final Beneficiaries. A separate household survey will explore the potential wider benefits for Direct Final Beneficiaries.

Project beneficiaries are defined as follows:

- Direct Final Beneficiaries - people living in the households equipped with PSH technologies.
- Indirect Final Beneficiaries of the project are the 866,600 inhabitants of districts 5, 7 and 8 in Kabul.

Research Aim (Hypothesis)
The primary aim of the research is to explore whether the introduction of PSH technologies are known about by residents of Districts 5,7 & 8 of Kabul.

In doing so, research will explore:

- the awareness of PSH packages
- information supporting PSH promotion.

Methods and Fieldwork
The approach to fieldwork and design of the questionnaire (survey instrument) needs to be cognisant of a

number of important specific issues and considerations:

- access to homes and related gender considerations
- education levels of respondents and complexity of the survey
- the prevailing security situation in the city
- limited time and resources available to complete the fieldwork
- complex multi-family households
- limited information regarding financial matters available to non-heads of households.

In addition, standard research issues and considerations will apply such as confidentiality, methodological and epistemological constraints, memory effects, acquiescence and sample bias.

The questionnaire will be designed, where possible, to facilitate comparability with the Direct Beneficiaries survey and Baseline survey. The latter provides valuable information regarding the practices of beneficiaries prior to project implementation.

The questionnaire will be administered by fieldworkers (mixed gender, two-person teams) and is intended not to take longer than 10 minutes. The questionnaire will be structured, with questions being closed (pre-coded). The survey will take the form of a street survey rather than household survey, with data collection point being identified at a number of public sites (shops, bazaars, transport nodes, mosques, public offices, etc.)

A draft survey in English is included in **Appendix A**, to be finalised and translated in collaboration with the project team.

The survey will be administered to people whom self-identify as the head of household or as a senior member of the household – the people most likely to have an involvement in household financial affairs and decision-making.

Sampling
Indirect Final Beneficiaries of the project total 866,600 inhabitants of districts 5, 7 and 8 in Kabul. With, on average, 10 people living together per household, this reflects roughly 87,000 households. The street survey, although interviewing individuals outside of their homes, seeks information about their household not the individual per se.

A calculation of required sample size (assuming a 95% confidence level and a 5% margin of error) indicates the need for a sample of 380 interviewed respondents. Rejection rates will be high given the need to identify suitable respondents coupled with the inherent difficulties of interviewing in street locations.

2-4 Interview locations per district will be identified, 6-12 in total.

Analysis
Within the limits placed on achieving full randomisation inherent in street survey methods of this type may introduce some bias. Interviewing during peak activity periods will in part mitigate this: before work, after work and during lunchtime. It should also be noted that senior members of the households are likely to be the most mobile and active outside the home. As such and within these constraints data should nevertheless be sufficiently robust to make generalised conclusions about Indirect Beneficiaries as a whole. Analysis will be undertaken using SPSS, applying a number of appropriate statistical tests as well as producing descriptive statistics.

Timeline

Task	Resource Requirements	2 week Inception Period	2/3 week Field Work Period	2 week Reporting Period
Survey finalisation	RR GERES team			
Survey translation	GERES team			
Field training and piloting	RR Field team			
Fieldwork and monitoring	2 x field teams (2-person)			
Data capturing and cleansing	RR Field team			
Analysis	RR			

Annex A
Draft Questionnaire

SCREENING SECTION

Head of household?			
Yes		No	
Senior member of household?			
Yes		No	
In which District is your house located?			
5	7	8	

If NO to both questions, or the house is located outside district 5,7 and 8, thank them for their time and tell them you don't need to ask them any more questions

Gender?	
Male	Female
Neighbourhood?	

Interviewer's name	Interview Number

Interview Notes

Introductory information			
Size of household?		Number of Families in household?	
Number of Children? *(Age less than 15. Check numbers tally)*		Number of Adults? *(Check numbers tally)*	

Q1	Please explain what you understand by PSH (Passive Solar House/ Garm Khona-e Aftabi)? *(please tick, more than 1 if required) (Unprompted)*		
1a	Cannot explain		
1b	Insulation of the roof		
1c	Double glazing of windows		
1d	Other Insulation:		
1e	General insulation of the house		
1f	Garm Khona covered by plastic		
1g	Garm Khona covered by glass		
1h	Greenhouse (Gul Khona)		
1i	Other:		

Q2	Have you ever heard of the following expressions? *(please circle, more than 1 if required)*		
2a	Insulation of the roof	YES	NO
2b	Double-Glazing	YES	NO
2c	Plastik-e Khona	YES	NO
2d	Garm Khona	YES	NO
2e	Garm Khona-e Aftabi	YES	NO

Q3	*(Surveyor shows picture of a Veranda)* Do you know this? *(please circle)*
3a	NO
3b	YES

Q4	If YES, what do you call it? *(please tick)*		
4a	Don't know		
4b	Gul Khona		
4c	Plastik-e Khona		
4d	Gram Khona		
4e	Gram Khona-e Aftabi		
4f	Other:		
4g	Other:		

Q5	If YES, what is its purpose? *(Unprompted)* *(please tick)*		
5a	Heat the house		
5b	An extra room		
5c	Save fuel in winter		
5d	Improve the house		
5e	Cool/refresh the house in summer		
5f	For children/women		
5g	For domestic tasks		
5h	New living room		
5i	Meeting room/guest room		
5j	For flowers/birds		
5k	Workshop		
5l	Don't know		
5m	Other:		
5n	Other:		

Q6	If YES, which of these purposes does it have? Do you think it can be used for: *(please circle)*			
6a	Additional/extra room	YES	NO	DON'T KNOW
6b	Heating the house	YES	NO	DON'T KNOW
6c	Being warm in winter	YES	NO	DON'T KNOW
6d	Saving fuel in the winter	YES	NO	DON'T KNOW
6e	Airing/ Refreshing the house	YES	NO	DON'T KNOW

Q7	What disadvantages do you think it has? *(please number in order stated, prompt for second response)*		
7a	Price too high		
7b	Quality poor		
7c	Keeping it clean		
7d	Summer use		
7e	Plastic		
7f	Maintenance		
7g	Don't Know		
7h	None		
7i	Other:		
7j	Other:		

Q8	Question 3a According to you, what could be the price for a veranda? *(use their word)*

Q9	Do you think verandas *(use their word)* are affordable at the price you mentioned? *(please circle)*
YES	
NO	
DON'T KNOW	

Q10	Would you consider buying one? *(please circle)*
YES	
NO	
DON'T KNOW	

Q11	If verandas *(use their word)* saved 25% of your heating bill (wood, coal) and kept your house a little warmer than it normally is in the winter would you consider buying it? *(please circle)*
YES	
NO	
DON'T KNOW	

Q12	If the cost was subsidised would you consider buying one? *(please circle)*
YES	
NO	
DON'T KNOW	
Q13	If YES, how much subsidy would you need?

Q14	If there was a loan available to purchase a veranda *(use their word)* would you consider this? *(please circle)*
YES	
NO	
DON'T KNOW	
Q15	If YES, how much could you afford to pay towards the loan each month?
Q16	If NO, why not?

Q17	PSH Verandas have the following benefits and uses: how important do you think each one is? *(please circle)*				
17a	Saves Fuel/money	Very Important	Important	Not Important	Not Sure/Don't Know
17b	Good for the Environment	Very Important	Important	Not Important	Not Sure/Don't Know
17c	Extra warmth	Very Important	Important	Not Important	Not Sure/Don't Know
17d	Social Use	Very Important	Important	Not Important	Not Sure/Don't Know
17e	Extra Space	Very Important	Important	Not Important	Not Sure/Don't Know
17f	Educational Use	Very Important	Important	Not Important	Not Sure/Don't Know
17g	Use for Washing	Very Important	Important	Not Important	Not Sure/Don't Know
17h	Health and Hygiene benefits	Very Important	Important	Not Important	Not Sure/Don't Know
17i	Income generating activities for women	Very Important	Important	Not Important	Not Sure/Don't Know
l7j	Business Use	Very Important	Important	Not Important	Not Sure/Don't Know

Q18	Where would you go if you wanted to buy PSH? *(please number in order stated)*		
18a	GERES		
18b	Craftsmen/artisan		
18c	Bazaar		
18d	Wakil		
18e	Shura		
18f	Don't Know		
18g	Other		
18h	Other		

ANNEX F: Thematic Questions

Relevance:

- What are the characteristics of the target groups and real beneficiaries of the project?
- Was project strategy properly adjusted along its implementation?
- Is logical framework relevant, in terms of objectives, outcomes, activities, means and hypothesis?
- Are project objectives in line with and in support to national and municipal policies and programmes?

Effectiveness:

- To what extent targeted final beneficiaries of ESS have really access to those technologies?
- To what extent final beneficiaries benefit from ESS?
- To what extent trained artisans benefit from ESS dissemination?
- Are difficulties and/or unplanned negative impacts related to ESS dissemination properly mitigated?
- To what extent unplanned positive effects have enhanced project benefits?
- To what extent monitoring and evaluation system facilitated project objectives' achievements?

Efficiency

- Were means and resources enough and properly used for activities implementation?
- Were project resources properly managed, planed and monitored, for cost efficiency?
- To what extent was project planning properly communicated, implemented, and adapted to project resources? Are results of good quality?
- To what extent did activity monitoring enhance activity implementation and facilitated corrective measures and strategic reorientations?
- To what extent where the expected results achieved, and what is their quality? Did monitoring enable to follow-up results achievements and facilitate reorientations?
- Was the institutional strategy efficient enough for achieving results?
- Were all the partners able to contribute to the project?

Impact:

- What is the impact on the overall economy, both at the level of local economic development (small-scale enterprises of trained artisans, material suppliers, local markets, etc.) and at the level of domestic economy (improvement of households' comfort, reduction of fuel and health expenses, development of income-generating activities, etc.)?
- What is the impact on fuel consumption reduction, reduction of energy vulnerability and impact on environment?

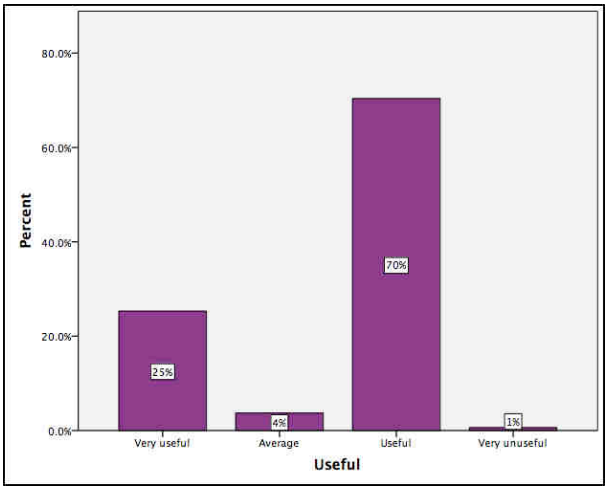
- What is the impact on knowledge related to energy efficiency, potential effects and existing solutions?
- In the current context, can we expect that the project will have a large scale and positive impact?
- Were the positive project impacts enhanced by project activities, and negative impacts decreased?

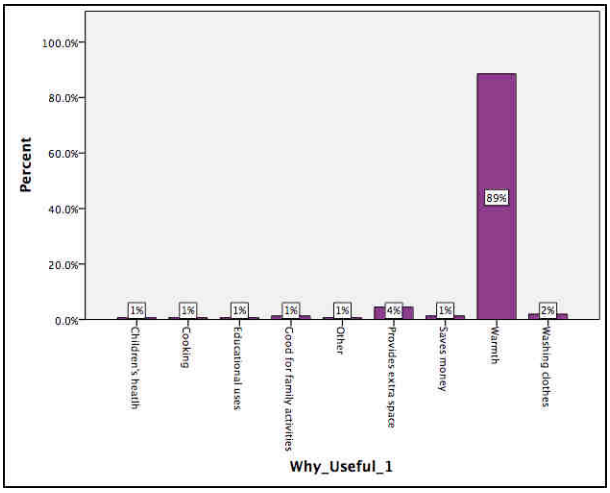
Sustainability:

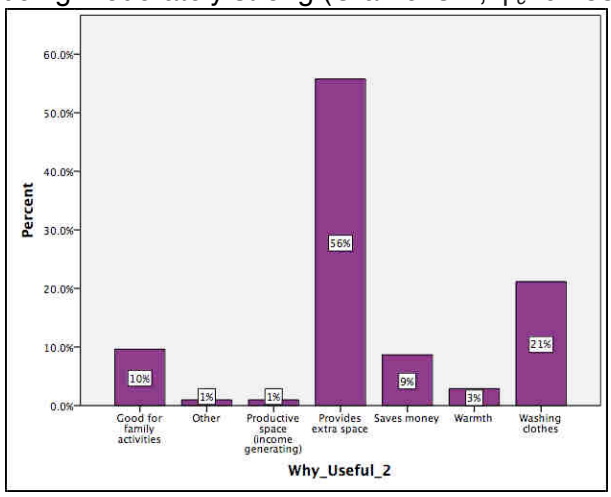
- Can ESS be affordable for the final beneficiaries after project completion?
- Can ESS maintenance cost be afforded by ESS owners? Will they still use the technologies?
- Can ESS still be self-disseminated after project completion? How will the quality evolve?
- Was an exit strategy elaborated and applied?
- To what extent is the project incorporated within local communities? Were the target groups and final beneficiaries involved in project implementation' design?
- To what extent did the project interact with the institutional level? Was there effects on the project?
- Were non-governmental stakeholders reinforced, for participating to elaboration and implementation of specific policies?

ANNEX G: Notes on usefulness, satisfaction and additional space

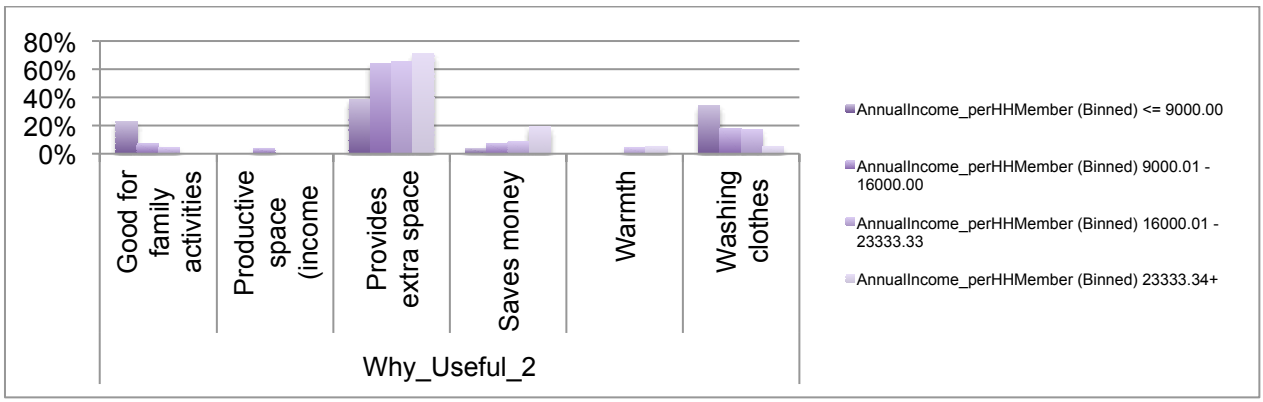
Overall, 95% of households reported that they found PSH useful or very useful and only 1% did not find PSH useful. When asked to explain why, warmth was stated by 89% of respondents as their first response and this varied little with income levels per household member. However, for the second response to the same question the most common answer was that PSH provides extra space 56%, but this varied significantly (Fisher's Exact Test, p=0.03) with income levels per household member: only 38.5% of the poorest household (income per person of less than 9000 AFN) making this response, instead they were more inclined than wealthier households to mention washing clothes (34.6%) and family activities (23.1%). This association between income and usefulness can be considered as being moderately strong (Cramer's V, ϕ_c=0.288)

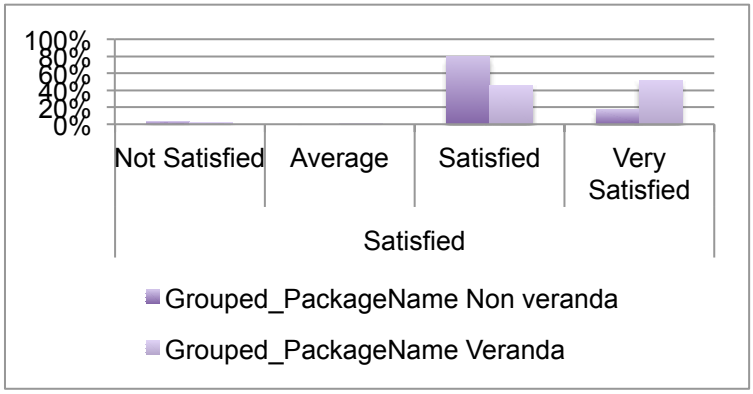




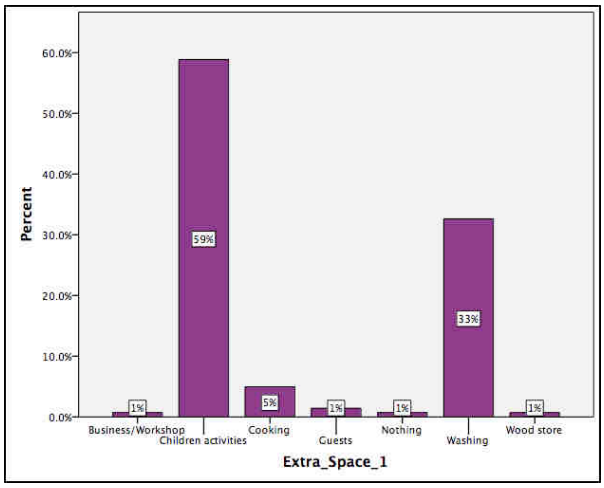


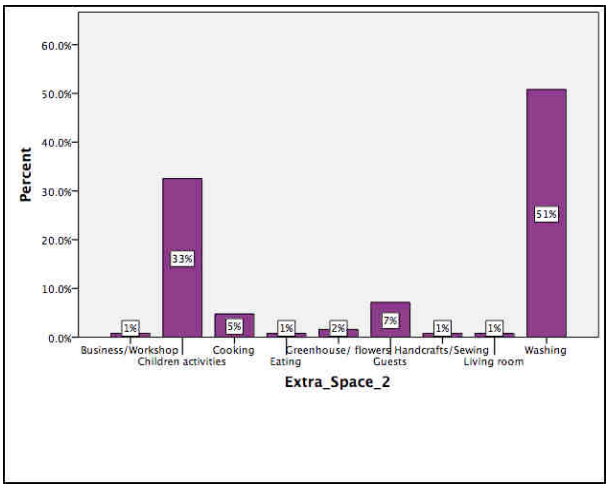
Since usefulness is linked to the provision of extra space, it is not surprising then that usefulness was also associated with having a veranda or not as part of the PSH package (Fisher's Exact Test, p=0.01). Here, very satisfied responses were 28 percentage points higher for veranda recipients than non-veranda recipients. The association was moderately strong (Cramer's V, ϕ_c= 0.285).



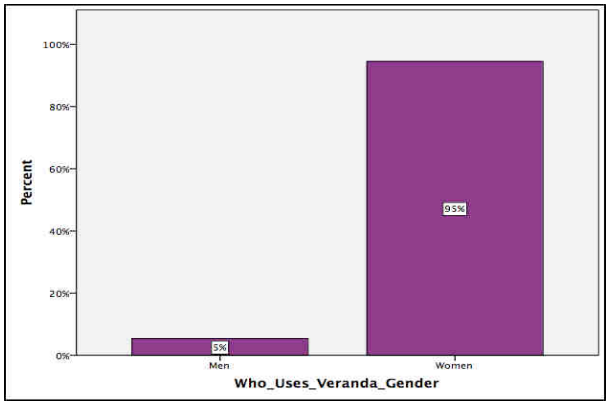


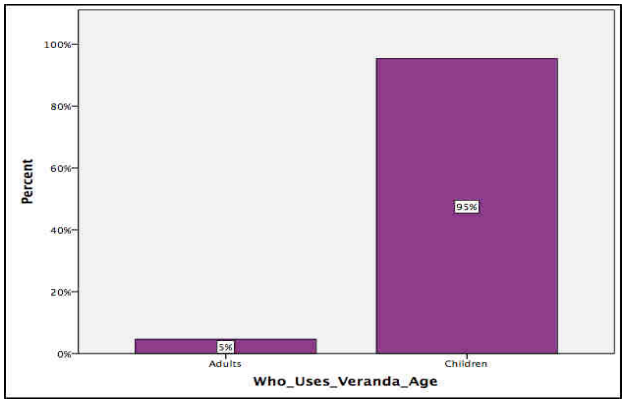
We can also observe a statistically valid (Fisher Exact Test, p=0.000) and very strong association between having a veranda and the improvement of activities that typically require a physical space (a room). The main improvement first mention by people with a veranda was housework, whereas for houses with only insulation and double-glazing they mentioned family health. Likewise for the second mentioned improvement, the most common response for households with verandas was childcare, compare to warmth mentioned by households without veranda.



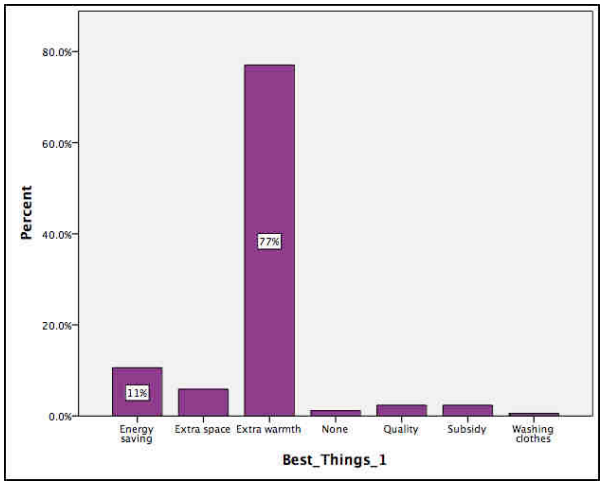


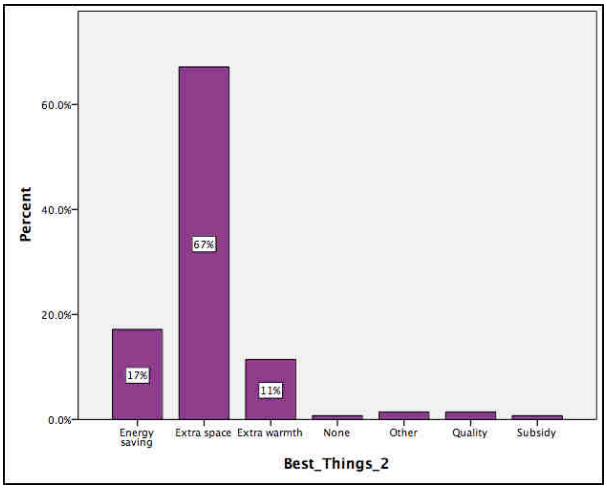
Following on with the theme of additional space, households with verandas used the extra space primarily for children's activities followed by washing clothes. In total, 92% of respondents with verandas indicated the extra space was use for children's activities either as their first choice (59%) or second (33%). Nevertheless, verandas were also used for a wide range of other purposes as the graphs below indicate. These results aligned with the responses to questions that asked who used the space most. In terms of gender, women were reported in 95% of the cases to use the veranda more than men. Additionally, in terms of an age break down of usage, children were reported to use the space more than adult in 95% of the cases.





Finally, the perceived benefit of extra space for households is further revealed in the questions regarding what were the best and worst things about PSH. As indicated earlier, respondent indicated that the warmth provided by PSH was of primary importance. However, extra space came a close second with more than 70% of respondent mentioning it either as a first or second response.





ANNEX H: Examples of PSH Package

Fitting **Roof Insulation**

Fitting **Double-Glazing**

Meeting inside a **wooden veranda** with a **plastic covering**

Version 15 of the Geres **stove**

A **metal framed veranda** with **glass coverings**

Making a **wooden framed** veranda with **plastic covering**

A **wooden framed veranda** with **plastic covering**

Covering a **metal framed** veranda with **plastic coverings**