When looking at the right type of interview, type of housing and question number. Below examples of the coding are given to better understand the way of referencing.

**Example 1:**

BI (Baseline).PRP (Pre-Realization Phase).DS (Desired Housing).F1 (Factor 1).Q1.4.10.16a (Questions: 1, 4, 10 & 16a)

**Code:** BI.PRP.DH.F1.Q1.4.10.16a

**Example 2:**

II (Impact Interview).AP (Articulation Phase).CH (Current Housing).F2 (Factor 2).Q44.12.56 (Questions:44,12& 56)

**Code:** II.AP.CH.F2.Q44.12.56

In rare cases a transcription is used to emphasize on a specific statement the family made, in this case the following code is used:

**Example 3:**

II (Impact Interview).TS(Transcription).P20 (Page 20).F11 (Factor 11).Q44 (Questions:44)

**Code:** II.TS.P20.F11.Q44

### Impact support

The most important cornerstone of the overall research revolves around inhabitant capacities in relation to their housing. Here the availability of materials, knowledge, skills and finance within the inhabitant’s capacities are considered as the main contributors to their level of self-reliance. Because these capacities have a strong interrelation they are separately addressed. Every section uses the same order in presenting the findings: starting with current housing (Baseline Interview), followed by desired housing (Baseline Interview) and closed by the new housing (Impact Interview).

Family 11 had to be removed from the project due to abusive behaviour (family, community and the team). The project was abandoned just after starting the foundation. To differentiate between the different group this family is therefore written with an underscore.

**Family 5** was the control group of the experiment and is written in bold text.

### Post Realization Phase

As previously explained the post-realization phase consist of three parts: Inhabitant capacities (A), Community capacities (B) and External capacities (C).

#### Inhabitant capacities: Factor II & V

The families only owned few tools themselves, most tools required for housing construction are borrowed or shared between families. Although tools are an intrinsic part of housing production this factor could not be assessed within the interview. Therefore, tools are left out of the analysis. Moreover, questions on skills were insufficiently answered and are due to their close relation to knowledge combined into: knowledge & skills.

**Materials: Factor V**

**Current Housing:** Although the support tool aimed at helping families which had local and free materials available, answers about their current housing show that already in their current habitation the majority of materials/components were bought and required transportation (BI.PRP.CH.F5.Q10.10a.10b). However, all families mainly (except in some cases: roofing sheets, cement and nails) used local and natural resources (BI.PRP.CH.F5.Q7.11), consisting of: soil, wood, grass, branches and cow dung. When asked if they would consider these materials (ranging from very cheap to very expensive: Likert Scale), the *non-manufactured natural materials*[[1]](#footnote-1) were significantly cheaper than the *manufactured non-natural materials* [[2]](#footnote-2)(BI.PRP.CH.F5.Q12).

Results show that all families already had a substantial amount of manufactured non-natural materials used in their current housing. Although the majority of used materials were non-manufactured natural materials. However, the majority of materials require transportation (collected outside the community). The families indicated that they find the manufactured non-natural materials substantially more expensive than the non-manufactured natural materials.

**Desired Housing:** Looking at their desired housing all families articulate almost the exact same desired materialization: concrete, bricks/cement blocks, metal doors & windows, timber trusses, and iron sheet roofing (BI.PRP.DH.F5.Q35). They stated that all are partially or not locally available (BI.PRP.DH.F5.Q40), will need to be bought (BI.PRP.DH.F5.Q40a) and would require hiring labour to gather the materials (BI.PRP.DH.F5.Q40b). As all stated materials are manufactured and non-natural, they are considered significantly more expensive than their current housing (which in various degrees have non-manufactured natural materials), average score: expensive (BI.PRP.DH.F5.Q41). Meaning that the families consider manufactured non-natural materials more expensive than non-manufactured natural materials. When asked if the families would consider alternative materials that have similar characteristics but are cheaper than non-manufactured natural materials, all families agreed, although doubts arose if they exist (BI.PRP.DH.F5.Q63).

All families described a very similar desired housing, with mainly manufactured non-natural materials that will need to be paid for and require hired transport. They confirmed that they find these preferred materials to be expensive and that they would consider cheaper alternatives that have similar characteristics.

**New Housing:** When looking at the used materials in the new housing, the control group shows that almost all materials are comparable to desired housing (II.PRP.NH.F5.Q60). The support groups applied natural materials in various degrees. Mainly applied in walls: soil and sand (II.PRP.NH.F5.Q60). Although none of the support groups articulated housing solely with non-manufactured local materials, they applied significantly more than the control group (II.PRP.NH.F5.Q64). As earlier observed, the majority of both non-manufactured natural and manufactured non-natural materials are not locally available (II.PRP.NH.F5.Q63). However, the support groups did apply free materials, the control group had to pay for all materials (II.PRP.NH.F5.Q63a). As a result the support groups applied comparable or considerable cheaper materials than the control group (II.PRP.NH.F5.Q65).

The control group shows the most similarities between their desired and new housing. The support groups applied significantly more non-manufactured natural materials that were often inexpensive, however none of them were entirely built form local materials. Although natural, some of the materials did require transportation and therefore required payment. However, the control group applied comparable (to one other family) but in almost all cases significantly more expensive manufactured and non-natural materials.

**Knowledge & Skills: Factor V**

**Current Housing:** In the current housing all families stated that they built the house partially or even in one case (*family 11*) entirely by themselves (BI.PRP.CH.F5.Q13). For specific parts of the house; where they lacked knowledge or skills; they hired a local builder (BI.PRP.CH.F5.Q13j) to instruct the family, never hiring them to do the work for them but merely offering the basis to perform the building activities by themselves (BI.PRP.CH.F5.Q13). All families stated that they do not know how to completely build their current house without help (BI.PRP.CH.F5.Q28), that this help/knowledge is not available for free in their community (BI.PRP.CH.F5.Q28b) and that these issues are so complicated they had to hire labour (BI.PRP.CH.F5.Q28c). The majority of the families stated that if they would have known how to build the parts they lacked knowledge on, they would have built the house entirely by themselves (BI.PRP.CH.F5.Q13j1). Consequently, they all stated that they need to gain external knowledge to enable them (BI.PRP.CH.F5.Q30a) however, when asked for which parts, all families contradicted previously identified knowledge gaps (BI.PRP.CH.F5.Q30b). All families stated that they prefer to build a house they have sufficient knowledge of (BI.PRP.CH.F5.Q29) and therefore, prefer to build the house by themselves (BI.PRP.CH.F5.Q30). When asked to what extend they are able to construct their current house by themselves, they answered: little (two families), able (two) and one very high (BI.PRP.CH.F5.Q14). When asked which parts of the house they are able to repair, two families answered nearly everything, the other families can only repair the walls (BI.PRP.CH.F5.Q22b). The majority of the families know how to repair most of the house (BI.PRP.CH.F5.Q23). Elements they struggle with are mainly the roof, windows and doors (BI.PRP.CH.F5.Q22c). All families were taught to build this way by either family (father/parents), friends or neighbours/community (BI.PRP.CH.F5.Q15). When asked if the families would consider buildings methods closer to their building knowledge, they all stated yes (BI.PRP.CH.F5.Q32). However, three of the families prefer materials that are not close to their existing knowledge and one identified that this is the reason why they need external support. Although all families would prefer to learn how to build the house by themselves (BI.PRP.CH.F5.Q33) this is mainly to enable them to: maintain, extend or replicate the house in the future (BI.PRP.CH.F5.Q33a).

The outcomes confirm that in current housing the families were able to build most of the housing by themselves, taught by family and community members. All families indicated that they have a moderate or advanced understanding on building and repairing their current house. However, also show that they need external hired labour for specific aspects, because they are too complicated. That this external help is to instruct the family in the process, enabling them to build the house by themselves (under supervision). Although indicating that current improved building solutions lay outside the community’s knowledge sphere. This knowledge is not available for free in the community. That they all prefer to build the house entirely by themselves and need external support (reconfirming: hypothesis 1). When asked for which parts of the building process, they answer inconsistently with previously identified knowledge gaps, indicating that: they struggle to identify exactly what external support they need. However, all parts of the house that they struggle with involve manufactured non-natural materials. Indicating that they require external support as their preferred materials are not similar to their existing knowledge. The families prefer to build a house they have knowledge in terms of materiality and construction methods, although that their desired house would currently not meet these. They all would consider materials and solutions that have comparable characteristics to their desired housing. They found the ability to maintain, extend or replicate the house, important for requesting external support.

**Desired Housing:** When asked if the families would want to learn how to build/repair their desired housing, all families answered they would (BI.PRP.DH.F5.Q48). Which contradicts their preference when asked if the families want to build this desired house by themselves (BI.PRP.DH.F5.Q43). Here two families (family 1 & 5) do not want to build the house by themselves. Family 1 also does not want to know how to build/maintain the house by themselves (BI.PRP.DH.F5.Q47) where the other families do want to. The majority of the families (except family 1) would repair the house by themselves if they would know how to build/maintain the house (BI.PRP.DH.F5.Q47a).

All families want to learn to build their desired house, however is contradicted by two of the families that prefer to hire labour to build the house for them. However, prefer to learn how to build or maintain their house. Indicating that family 1 and **family 5** had a different preference in level of self-reliance in comparison to the other families before the start of the experiment. Although the majority wants to learn how to build their desired housing, which would enable them to repair the house (which they would perform by themselves).

**New Housing:** Three out of the five families have the skills to finish the house by themselves (II.PRP.NH.F5.Q51h). As the project was abandoned during the construction of the foundation of family 11, it is understandable this family is unable to finish the house by themselves. **Family 5** (control group) also stated that they are unable to finish the house, which is odd considering the fact that the house was the closest to completion. When asked if the teams offered the missing knowledge the answers were inconclusive (II.PRP.NH.F5.Q70l). The families were asked to state per building phase to what extend they have the knowledge to build the new house the support groups scored substantially higher than the control group (II.PRP.NH.F5.Q71). The highest score (4 out of 5) of the control group stated a high comprehension level of the foundation phase. However, considering the almost complete absence of the family in this phase, they either already had the knowledge (and not participate) or did not answer truthfully (can also be seen in the transcription). When asked if the teams trained them this way all support group families agreed, where the control group disagreed (II.PRP.NH.F5.Q72). Add question 73 after improving. Three out of four support group families (family 11 most likely due to cancellation) agreed that they are able or almost able to extend or duplicate the house by themselves (II.PRP.NH.F5.Q74), where the control group is unable. In retrospect the families were asked if they could have realised the house without the teams help. The majority (4 out of 5) could not have built the house without the team (II.PRP.NH.F5.Q78). Again family 11 did not needed the help (maybe only with making the plan and starting the building phase). The support groups did need the help and gave a variety of reasons why: motivation (family 1), new techniques: brick (family 8 & 4) and foundation: rocks without cement (family 8) and knowledge. The control group needed the team for the design and funding of the house.

The control group and family 11 stated that they are not able to finish the house, where the other families are able. Although the control group families were inconclusive if the teams provided the missing knowledge, their knowledge levels per building phase are substantially higher in comparison to the control group. All control group families stated that they were trained to build the new house. Which also shows in the families’ high ability to extend or duplicate the house by themselves (except family 11 and the **control group**). The majority of families indicated that they needed the teams’ support, confirming the need of external support (hypothesis 1). Moreover, confirming the support groups shared technical solutions, where the control group shared their design and funding.

**Finance: Factor II**

**Current Housing:** Although owning a house was a selection criterium only three families owned the house and two rented (BI.PRP.CH.F2.Q1). The families which owned their house they financed them through savings (BI.PRP.CH.F2.Q1a). To better understand what the families would consider expensive in their housing, they were asked how much the roofing sheets costed (one of the most expensive manufactured non-natural materials in current housing) and if they considered them expensive. Although prices for the roofing sheets did fluctuated (300-500 KSh. Per sheet), most of the families perceived them to be expensive (three families) and one moderate (BI.PRP.CH.F2.Q8c.8d). In the follow-up question the families were asked to state per material to what extend they perceive them to be expensive. Family 11 stated that everything except a part of the roofing (wooden spacers) was entirely free. However the other families had to buy most or some of the some materials and were considerably more expensive (BI.PRP.CH.F2.Q12). Again, the manufactured non-natural materials are perceived as the most expensive. The entire housing realization costs were estimated on: 40.000, 120.000, 80.000 and 36.000 KSh (BI.PRP.CH.F2.Q24). Of the two families that did answer, they both indicated that they could not afford to hire somebody to perform the repairs on the house in case they would lose their income (BI.PRP.CH.F2.Q23f).

The families that own their current house financed them through savings. Although there is one family that could almost build the entire house for free, the majority had to pay for most materials. Many non-manufactured natural materials were not available in the community anymore and consequently required hired labour and transport. The entire costs for their current housing was estimated between 35.000-120.000 KSh. Surprisingly the families that answered (two) they could not afford repairs to the house if they would lose their income.

**Desired Housing:** The two families that preferred to hire labour to realize their desired housing answered that they have insufficient funds to buy materials and hire labour (BI.PRP.DH.F2.Q38b). The materials listed for the desired housing are considerable more expensive than the current housing (BI.PRP.DH.F2.Q41). When asked if thefamilies could currently finance their desired housing three out of five stated they could not (BI.PRP.DH.F2.Q42). The two families that can afford their desired housing have sufficient savings to do so (BI.PRP.DH.F2.Q42a). Which, raises the question why the families applied to the project in the first place, although this was unknown at the time the families were selected for the experiment. At the time the interview was conducted, the answers given by these two families were considered as a possible misunderstanding. In retrospect one of these families was excluded from the project and the other complicated the building phase by changing materials (explained at the new housing section).

Two families can’t afford to hire labour to build their desired house, however would prefer to hire labour. All desired materials are substantially more expensive than those of the current housing. Based on these material choices the majority (three) of the families does not think they could afford them. The two other families stated that they can afford the desired housing, which raises the question why they applied for the experiment.

**Income:** Originally the families’ income and assets were excluded from the interviews. However, proved to be important to better understand the financial capacities between the current and new housing. All families stated that they have an income (BI.PRP.CH.F2.Q79), own a land (BI.PRP.CH.F2.Q85) where they grow crops (BI.PRP.CH.F2.Q84) which mainly generates an income (BI.PRP.CH.F2.Q84) or is used to feed their family. Most of the families stated that their income seasonally fluctuates (BI.PRP.CH.F2.Q81b), only one family has a stable income (BI.PRP.CH.F2.Q81). Their income ranges between 5.000 to 30.000 KsH (BI.PRP.CH.F2.Q80), however seasonally dropping to 3.000 to 15.000 KsH (BI.PRP.CH.F2.Q82).

All the families have an income and own a plot where they grow crops for income or to feed the family. Besides the yield the majority of the families stated that their incomes fluctuate, range between 5.000-30.000 KSh and seasonally drop to 3.000-15.000 KSh.

**New Housing:** The majority of the families spent money on materials and labour which were not budgeted by the team (II.PRP.NH.F2.Q51c). When asked if the families have the means to finish the house all support groups stated they do, where the control group stated the don’t (II.PRP.NH.F2.Q51c). The same applied for financing the house, only the control group used a loan to build the house (offered by their team: which is not a loan but a gift), the other families all used their savings (II.PRP.NH.F2.Q56). The control group family stated that their team financed almost all costs involved to realize their house. Some materials were similar between all the houses (cement, sand, ballast, etc.) which all were consistently stated as expensive by all families (II.PRP.NH.F2.Q65). However, the level of expenses involved in the control group are considerably higher than those of the other groups. It should also be mentioned that many of the support teams were unable to convince families to use more non-manufactured natural materials. In two support groups the families largely discarded the solutions of their team and replaced them for manufactured non-natural materials. All support group families are able to pay for repairs in the case they would lose their income, which contradicts the control group, that does no think they would be able (II.PRP.NH.F2.Q73a). When looking at the total sum of the new houses the differences are quite staggering (might be due to the unknown amount of savings):

Family 8: 57.000-67.000 KSh (income: 15.000 KSh), 4-5 months wages

Family 11: 300.000-400.000 KSh (income: 5.000 KSh), 60-80 months wages

Family 1: 450.000 KSh (income: 30.000 KSh), 15 months wages

Family 4: 200.000 KSh (income: 15.000 KSh), 13 months wages

**Family 5**: 310.000 KSh (income: 4.000 KSh), 77,5 months wages

The above summary shows that the family 11 and the control group have the most extreme income to investment ratio. The support groups have around a year’s worth of wages invested in their new housing (II.PRP.NH.F2.Q77), showing a significant different balance.

All families have made additional costs (materials and labour) which were not estimated by their team. However, all support group families are able to finish the house based on their savings. The control group; which was also the only family relying on external funds mainly offered by their team; is not able to finish the house by themselves. A considerable amount of non-local materials was used by all teams (which the families considered expensive), this although all groups formulated housing solutions with high levels of local materials. Most support groups stated that they struggled or were not able to convince families on material decisions, illustrating how persistent desired housing conceptions are. However, the control group applied considerably more expensive materials than the support groups. It was also the control group who stated that they are no able to pay for house repairs, which can be explained by the considerable investment that needs to be made to build the house (6,5 years wages). Which is only topped by family 11 (7 years wages), the other support group families all required approximately 0,5-1,5 years wages.

**Inhabitant Decision-making: Factor VIII**

**Current Housing:**­­­­ Current housing shows that the family already used manufactured non-natural materials and for example consider iron sheets to be expensive (BI.PRP.CH.F8d). However, the families struggle to list cheaper alternatives (BI.PRP.CH.F8.Q8d1a). Moreover, that when they list the negative characteristics, they still prefer roofing sheets as they are aesthetically pleasing, fire resistant or simply easier to get (BI.PRP.CH.F8.Q8d1.9). They are aware that manufactured non-natural materials are more expensive (BI.PRP.CH.F8.Q12) and require more skilled/hired labour (BI.PRP.CH.F8.Q13j). All families would have preferred to build their house differently, with more desired materials (BI.PRP.CH.F8.Q25), however that they lacked the funds to do so (BI.PRP.CH.F8.Q27). Although they do consider alternative cheaper materials with similar characteristics (BI.PRP.CH.F8.Q31), which are closer to their existing building knowledge (BI.PRP.CH.F8.Q32) and would have enabled them to replicate or maintain their house in the future (BI.PRP.CH.F8.Q33a).

Families have previously mentioned that they are applying external materials that do not suit their capacities. However, they struggle to name possible alternatives that would suit their capacities. When asked the families value certain characteristics over the costs of the materials, this although they know that manufactured non-natural materials are more expensive and require knowledge/skills they do not have.

**Desired Housing:** The families desired to apply more external materials (BI.PRP.DH.F8.Q35); although they know they are expensive (BI.PRP.DH.F8.Q41) and would require substantial external knowledge; they think that they would be able to learn required skills in three months’ time (BI.PRP.DH.F8.Q36c). However, the majority would prefer to build the house by themselves (BI.PRP.DH.F33a) and would consider alternative/cheaper materials/methods that have the same characteristics (BI.PRP.CH.F8.Q46). Moreover, reconfirming that there is a high willingness to help construct a community building or house, in order for them to learn to build their house (BI.PRP.CH.F8.Q48a.48b).

The families prefer the desired housing materials although they do not have the capacities, moreover, do they believe that all required knowledge and skills can be taught in three months’ time. Again, indicating a very persistent common images and views on housing solutions. They would however consider materials that are cheaper, have comparable characteristics and are closer to their current knowledge/skills. Which they believe would enable them to replicate or maintain the house in the future. The families show a high willingness to help others build their house or realize a public building in order to learn an improved way of housing construction.

**New housing:** As mentioned before the control group used substantially more manufactured non-natural materials and external knowledge to construct their new house (II.PRP.NH.F8.Q60). However, the support group families did use more manufactured non-natural materials than intended by the support or their team. As explained at factor II, this was mainly related to differences in financial capacities of the families. Here the families (11 & 1) with higher financial capacities used more manufactured non-natural than the families with lower financial capacities (family 8 & 4). Moreover, did families 11 & 1, changed the materials originally planned by their teams (as stated by the teams in the end interviews) from non-manufactured natural to manufactured non-natural materials. Which contradicts the families’ statements who made material decisions: which were made jointly between family and team (II.PRP.NH.F8.Q61). The support relied heavily on community participation to ex-change knowledge and help the families for free. In the new housing solution community members would benefit from the families they helped in order for them to realize improved housing. However, this was impossible according to the families and any community member helping should be financially compensated (II.PRP.NH.F8.Q70h.70k). Although the interview insufficiently addressed these issues, they are addressed in the support feedback (see next section: 1.1.2) and end interviews with the teams.

The control group used considerably more manufactured non-natural materials and knowledge than the support groups. However, half of the support groups (family 11&1) used more manufactured non-natural materials than originally designed in the project. Families 8 & 4 did not have the financial means to make such decisions, which might explain why they had considerably more non-manufactured natural materials. Which might explain why the families 11, 1 & **5** decided by themselves to apply more manufactured non-natural materials. Often bypassing or even totally ignoring their teams, indicating that desired materials were preferred over the suggested alternatives by the teams. Families 4 & 8 had substantially more local materials in comparison to the other support teams.

#### Community’s capacities: Factor I & IV

None of the community members were interviewed, therefore the findings on the community’s capacities should be perceived through the eyes of the families which participated in the interviews. None of the interview questions addressed the topics finance and tools these topics are therefore removed from this section. Like the inhabitant capacities the topics knowledge and skills are merged in one topic.

**Materials: Factor I**

**Current Housing:­­­­** Although answers differentiated strongly many of the non-manufactured natural materials are locally available, where manufactured non-natural materials are not locally available. In others words non-manufactured natural materials are either available within the community or adjoining communities (BI.PRP.CH.F1.Q10). Manufactured non-natural materials require transport which is mainly hired (BI.PRP.CH.F1.Q10b). The majority of the materials are bought, only one family was able to build the house almost for free (BI.PRP.CH.F1.Q10a).

The majority of non-manufactured natural materials are available within the community or adjoining communities. Manufactured non-natural materials require transport which is mainly hired (labour and transportation). However, the majority of all materials are bought.

**Desired Housing:** The majority of the families prefer materials for desired housing which are either not locally or only few available (BI.PRP.DH.F1.Q40). All families would need to pay for the materials (BI.PRP.DH.F1.Q40a) and would require to hire someone to transport them (BI.PRP.DH.F1.Q40b).

The majority of materials for desired housing are not locally available, are paid and require hired labour and transport.

**New housing:** All support group families, applied local available materials. Indicating that not only transport was possibly reduced, but that also the majority of materials comes from within the community or adjoining communities (II.PRP.NH.F1.Q63). The control group family stated that only the timber was locally bought, and the rest of the materials were all from outside the community. The control group bought all materials (II.PRP.NH.F1.Q63a), the support groups had multiple materials, which were locally collected or available.

The support groups had various application levels of local materials, which were in some cases for free. The control group almost solely used non-local materials (except timber) and all materials were bought.

**Knowledge & Skills: Factor IV**

**Current Housing:­­­­** Although the support considered the community to still largely depend on building houses communally, the Baseline interview showed the contrary. Here all families build their current housing mainly by themselves in some case supported by an engineer or community member (BI.PRP.CH.F4.Q13.13a). However, when asked from who they received help they stated that this was received from their community members (BI.PRP.CH.F4.Q13b). Although the families that did state they receive help from the community was either small or focussed on a particular component (BI.PRP.CH.F4.Q13c.13f1) and was generally unskilled labour (BI.PRP.CH.F4.Q13f2). The majority of the families has helped other community members to build their house in the past (BI.PRP.CH.F4.Q17). Most of the families that did receive help; mainly digging (BI.PRP.CH.F4.Q17b); from community members did not help them in return (BI.PRP.CH.F4.Q17a). As mentioned earlier families do not have the knowledge to build desired housing by themselves. When asked all families answered that there are not any community members that could teach them for free (BI.PRP.CH.F4.Q28b & BI.PRP.DH.F4.Q36d).

The families mainly build their current housing by themselves, although sometimes helped by a neighbour. The help received from their community was often unskilled labour and for a minor or specific part of the housing (digging and building walls). The majority of the families stated that they did help other community members to build their house, although they did not receive their help in return. The families do not think community members could offer knowledge on improved housing solutions for free.

**Desired Housing:** Only two families would prefer to build desired housing by themselves and their community, the rest prefers to hire labour (BI.PRP.DH.F4.Q38). Also only two families believe that the community has sufficient knowledge to build desired housing (BI.PRP.DH.F4.Q43a).

Only two families would like to build their desired housing by themselves, the rest would prefer to hire labour. Moreover, only two families think that the community has sufficient knowledge to build their desired housing.

**New housing:** Almost all help the families received in constructing new housing was from their own families or neighbours (II.PRP.NH.F4.Q70a). Involved community members did mainly help in unskilled labour activities and were compensated (II.PRP.NH.F4.Q70d.70f). The majority of the families perceive this to be substantial help (II.PRP.NH.F4.Q70c). This is however contradicted by the teams (end interviews). The support group families are able and the control will not be able to extend or replicate the house by themselves or with the help of their community members (II.PRP.NH.F4.Q74).

The families mainly build their house by themselves and the team, little help was offered by the community (only some neighbours). If helped the families did consider this to be considerable, although was the offered help mainly unskilled and compensated (mainly financial and through offering lunch). The support groups were able and the control group was not able to articulate housing solutions that could be extended or replicated by the families themselves, supported by their community.

**Community housing model: Factor VII**

**Current Housing:­­­­** All families think that they were trained to build their current housing by their family, neighbours or community members (BI.PRP.CH.F7.Q15). As a result they are able to repair the house by themselves (BI.PRP.CH.F7.Q23). Indicating that there was commonly known housing model in which the community shared the knowledge that enabled families to build their current housing.

The families were mainly trained by their family, neighbours and other community members, enabling them to repair their current housing. Indicating that there was a community housing model which was shared and trained by its members.

**Desired Housing:** The majority of families had doubts if neighbours, community- or family members would help them to construct their desired housing. (BI.PRP.DH.F7.Q43c). As mentioned earlier the families do not think the desired building knowledge is available for free within their own community (BI.PRP.CH.F7.Q28). They however think that the training in desired building methods and materials would be possible to complete within three months (BI.PRP.CH.F7.Q36c), which is also reflected in their high willingness to learn how to build by themselves (BI.PRP.CH.F7.Q47), help realize housing for other community members in order to learn (BI.PRP.CH.F7.Q48a), or even through realizing a public building (BI.PRP.CH.F7.Q48b).

There is a strong overlap the families have in their desired housing, indicating there is a commonly known desired housing model. However, the families doubt if the community members are able to help them build their desired housing and the required knowledge is shared freely. The families have a high willingness to learn how to build desired housing through building other houses or buildings in the community. The majority of the families thinks that all involved knowledge and skills can be trained within 3 months’ time.

**New housing:** When asked who decided to build this type of house, the support groups stated that they did this together (II.PRP.NH.F7.Q58.59), also expressed in the selection process of materials (II.PRP.NH.F7.Q61). The exact opposite can be observed in the control group and family 11, here the families made all the decisions by themselves. Gained knowledge by the families is of vital important to share possible new housing solutions. Here the control group scored substantially lower than the other groups (II.PRP.NH.F7.Q71). Moreover, did the support groups train the family to build their new house, where the control group did not (II.PRP.NH.F7.Q72).

*The support group and family 11 stated that they themselves decided on the type of house and made the materials decisions. This resulted in housing that was very similar to the desired housing and in this perception was highly successful. However, their knowledge level on how to build this house is limited. With the support groups the opposite was the case, the families expressed that most decisions were made jointly. Although the families made many alterations; that aligned with their desired housing; some of the suggestions of the teams were adopted. Although not as many as the teams would have wanted (also expressed in the end interviews), their families indicated that they have reasonable knowledge levels and skills to build their new house.*

#### External capacities: Factor III & VI

**Finance: Factor III**

**Current Housing:** As stated earlier the families financed their current housing mainly through savings (BI.PRP.CH.F2.Q1a), although two families are currently renting (BI.PRP.CH.F3.Q1b). Indicating that currently there is already a need for external initiated housing provision in the community. Here the houses are financed by people from within and outside community. This renting system makes the families extremely financially vulnerable (fluctuating income endangers the ability to sustain housing).

The families did not depend on external funding or mortgage to finance their current housing.

**Desired Housing:** The majority of the families do not think they are able to finance their desired housing (BI.PRP.DH.F3.Q42). Which could be explained by the estimated higher material costs (BI.PRP.DH.F2.Q41), increased need to hire labour (BI.PRP.DH.F6.Q36.36b.36e) and transportation (BI.PRP.CH.F6.Q10.10a.10b). In the case the families are helped by an NGO the majority expects that they would require help after the project is finished (BI.PRP.CH.F3.Q49).

The majority of the families are unable to fund their desired housing, which can largely be explained by the desired material costs and the need to hire transport and labour. The majority of the families think that if helped by an NGO they would require support after the project is finished.

**New Housing:** The control group does not have the means to finish the house, which is the opposite in the case of the support group families, who all stated that they have the means to finish (II.PRP.NH.F3.Q51k). This although all families think that they will need to hire labour (II.PRP.NH.F3.Q51i). The control group bought all materials, where the support groups applied various amounts of cheap and/or non-manufactured natural materials (II.PRP.NH.F3.Q63a.65). The control group used a loan to finance the house, which is only partially true (II.PRP.NH.F3.Q56.56a.56b). Their team donated approximately 200.000 KSh money into the project. The loan the family took came from their employer to finance the rest of the required funds. The support group families all used their savings to build the new house, deploying existing financial capacities. When looking at the earlier stated financial capacities of the families, it is highly unlikely if the control group would have been able to build this type of house on existing financial capacities (II.PRP.NH.F3.Q77). It is important to mention that the control group team stated in their end interview that their main regret was to finance the project.

The control group stated that they financed their house mainly through the donations made by their team, they also had a loan to cover some of the costs. Looking at their shared income it seems highly unlikely they would have been able to finance the house by themselves. The other families stated they all have the means (based on savings) to finish the house even though they would require hiring labour to finish.

**Materials: Factor VI**

**Current Housing:­­­­** As mentioned earlier (community and inhabitant capacities) inhabitants depended on external materials (BI.PRP.CH.F6.Q7). Moreover, that many of the materials for their current housing are manufactured non-natural materials, which are bought and require hired labour for transport (BI.PRP.CH.F6.Q10.10a.10b).

In their current housing the inhabitants largely depend on buying, manufactured non-natural materials, which need to be transported (hired) and require external labour for their application.

**Desired Housing:** In the desired housing all families stated comparable materials, which shows an extreme incline in materials and knowledge from outside their community (BI.PRP.DH.F6.Q35). Confirming that some of the materials are locally available, however a considerable amount comes from outside their community (BI.PRP.DH.F6.Q40), the majority will need to be bought (BI.PRP.DH.F6.Q40a) and transport will need to be hired (BI.PRP.DH.F6.Q40b).

All families had similar desired housing, which indicates a high dependency on materials, knowledge and labour outside their own community.

**New housing:** The support tool aimed at lowering the amount of manufactured non-natural materials as much as possible. Although, the support groups did use manufactured non-natural materials, they are considerably less that the control group (II.PRP.NH.F6.Q60.64). These control groups got various materials locally or even had them on their plot. Only family 11 had the same amount of transported materials (except timber) in comparison to the control group.

The control group almost solely depended on manufactured non-natural materials, where the support groups had various levels of non-manufactured natural materials.

**Knowledge & Skills: Factor VI**

**Current Housing:­­­­** The majority of families hired labour to construct some parts of their current housing (BI.PRP.CH.F6.Q13h.13i). Mainly due to the lack of skills/knowledge to do it by themselves (BI.PRP.CH.F6.Q13j). The main reason for not building desired housing by themselves was due to the complexity and therefore they would need to hire an engineer (BI.PRP.CH.F6.Q28c). However, they would consider a building method that is closer to their current building knowledge (BI.PRP.CH.F6.Q32).

The families already depended on external materials, knowledge and skills in their current housing.

**Desired Housing:** All families answered that they do not know how to build their desired housing (BI.PRP.DH.F6.Q36.36b) and due to the level of complication depend on external (hired) engineers to build it for them (BI.PRP.DH.F6.Q36e).

All families lack knowledge and skills to build desired housing by themselves and therefore depend on external knowledge and skills to help them.

**New housing:** All support groups have taught the community members new skills (II.PRP.DH.F6.Q70e). The control group only had their own family participating during construction and therefore community members were not taught any new skills. The same counted for the external knowledge transfer between the teams and the families, here only the control group thinks that they were not trained by the team to build the new house by themselves (II.PRP.NH.F6.Q72). It was again family 11 & **family 5** that solely hired external labour, where the support groups only partially hired labour, which was mainly unskilled (II.PRP.NH.F6.Q70j) indicating that the control group depends more on external knowledge. Comparing the knowledge levels between current (II.PRP.CH.F6.Q14), desired (II.PRP.DH.F6.Q44b.47) and new housing (II.PRP.NH.F6.Q71), the support groups were successful in reaching a comparable/improved knowledge level between their families’ current and new housing. In comparison to the desired housing the success is even greater, where the families expected not to be able to extend or replicate the house without external knowledge (II.PRP.DH.F6.Q43e). Moreover, does the majority of support group families think that they needed the external support of their teams to offer: new techniques, materials and components. Moreover, to motivate the families and take initiative (II.PRP.NH.F6.Q78). However, of all the families there was only one who attended the construction site every day. It is therefore questionable to what extend the families are actually capable of reproducing the knowledge (II.PRP.NH.F6.Q66.66a). Despite this fact the families that had the teams operating with support had at least one family member attending the site every day. The control group family had the wife and children present every day, although they never participated in the actual building process. Moreover, suggesting that they only needed the external knowledge (team) to make a design and to offer funding to realize the house.

All support groups except the control group taught the community new skills, which was also the only group that stated they were not taught how to build the house by themselves. The control group and family 11 hired the most labour in comparison to the other groups. The support group families think they able to reuse developed knowledge in maintaining, extending or replicating their new housing. The support offered by the teams were: motivation, new techniques, materials and components. The support group family does not think they able to reuse developed knowledge in maintaining, extending or replicating their new housing. Moreover, that the team mainly offered support by making a floorplan and design. Which is relative considering that there was limited family participation in the realization process.

**External Housing Model: Factor IX**

**Current Housing:**­­­­ All families needed external help from the team to improve their current living situation (BI.PRP.CH.F9.Q30a). Moreover, that they needed help from a multitude of solutions: building method, materials, knowledge, training, articulating a housing plan and design (BI.PRP.CH.F9.Q30b). These external capacities grouped into a housing solution is called and external housing model.

All families needed external help from the team, mainly to help them with a multitude of solutions: design, materials, training, etc. Which per team was translated into an (external) housing model.

**Desired Housing:** All families prefer external materials that would require external knowledge and skills (BI.PRP.DH.F9.Q36b) which would require them to hire skilled labour (BI.PRP.DH.F9.Q36e). The majority of the families think they need external solutions (model) and the team to articulate improved housing solutions (BI.PRP.DH.F9.Q38a).

The families prefer external materials and knowledge for their desired housing. In other words, they prefer an external housing model. As mentioned earlier this desired housing model is shared widely amongst the community. Which therefore over time has become their current community housing model. The families think that they require external help and solutions to articulate improved housing.

**New housing:** Two families found the implemented external housing model (team + support tool) took too much time, the focus from the start should have been on constructing and less on researching (II.PRP.NH.F9.Q51f). As explained previously the decision to build this type of house and out of which materials, were made by the family and team in the support groups, which was not the case with family 11 and the control group (II.PRP.NH.F9.Q58.59.61).

Two families think that the introduced external housing model (through the support tool) took too much time and should the construction of the houses have started sooner.

#### Articulation Phase

**Suitability Housing Plan: Factor X**

In current housing the preferences and decisions are not rendered in a housing plan. In current housing, materials were gathered or bought according to available funds and donations. Commencing the construction of the house would simply start when the required materials, tools and labour (family, neighbours and community members) were available. Therefore, it was extremely difficult to measure the impact of the articulated new housing plan with those of the current or desired housing plan (as there weren’t any). There was one question that addressed if the families would have preferred to build their current house differently. Where all families confirmed that they would have preferred to build it differently (BI.PRP.CH.F26) and mainly with external materials (BI.PRP.CH.F27). However, that they had insufficient funds to do so (BI.PRP.CH.F27a). Indicating that the families would have preferred to articulate a more suitable housing plan however that they could not afford such plan.

*In the current housing the families did not make physical housing plans and although they were made for their new housing, they can’t be compared.*

**Housing Status: Factor XI**

Housing status[[3]](#footnote-3) was the major unforeseen factor in the experiment. The type of housing a family has defines the social position they hold within the community. This position influences who the families associate with, moreover, the chances they have in improving their livelihood. While conducting the baseline interviews some of the answers given by the families did not only point towards a functional improvement to the house but sometimes mentioned inconsistencies between what they desire and what they can actually afford (within their capacities). Although it is extremely difficult to prove that this is the case, after conducting the impact interviews (especially with the control group), this factor had to be included in the research.

Current & Desired Housing:­­­­ All families found their current housing too small or didn’t like materials used for walls and floors (BI.PRP.CH.F11.Q18c). They would consider cheaper alternative materials with similar characteristics to external materials for their desired housing (BI.PRP.DH.F11.Q46). However, did some of the families prefer to have the house build for them although they clearly could not afford that. Indicating that housing status is closely related to the family’s ability to have a house build and not self-build.

New housing: When asked what they liked about the new house two families stated the design, to others that the house is self-contained or permanent and one that it’s a new generation (II.PRP.DH.F11.Q75a). When asked what makes it so special, two families answered: because its permanent (II.PRP.DH.F11.Q75c), one that since birth they never lived in such a house and one due to materials. Between the families there was not much difference to report however, the control group came with a significant insight. When asked if their relation with community members changed due to their new housing (II.TS.P20.F11.Q?), the father answered:

“No, this point of view it’s a different case. So, we have two categories here: so, we have those who we dislike and those who like us. So, for example this house has put me to the level, with those now, for example those who have the brick houses now they are a friend of me […] We have those who we appreciate, because they now have reached the level and those we don’t appreciate because they don’t […] So, when you move from one class, you cannot expect friendship for another class.”

Although this is just a statement of one family, it had such a significant new insight that it seemed important to add housing status as an influential factor for inhabitant’s decision-making process (Factor VIII) in articulating desired housing (Factor X).

#### Articulation Phase

**% community labour Factor XII, Suitability build house Factor XIII & % hired (external) labour: Factor XIV**

**Current Housing:­­­­** If the families had to transport materials for their current housing, they all had to hire labour (BI.R.DH.F14.Q10b). Only one family received help from their community in constructing their current house (BI.RP.CH.F12.Q12). However, when asked if they had help and from whom the majority answered they had help from their community (BI.RP.CH.F12.Q13.13a.13b.13f). All families built the majority of their house by themselves supported by their family (BI.RP.CH.F13.Q13). However, the majority of the families partially depended on an hired engineer (BI.RP.CH.F14.Q.13.13h), mainly for some of the works and in one case most of the works.(BI.RP.CH.F14.Q13h.13i). Only one family require an hired engineer to make repairs to their house (BI.RP.CH.F14.Q23e). All families think that the required knowledge and skills to build their desired housing is so complicated they need to hire an engineer (BI.RP.CH.F14.Q28c).

In constructing their current housing, the families largely depended on hired labour and transport, mainly for some of the works, for one of the families this was for most of the works. The families did however mainly build the house by themselves with support from their community, family and friends. To realize desired housing the families, require external knowledge and labour.

**Desired Housing:** The majority of the families prefers to build their desired house by themselves (BI.RP.DH.F12.Q38.43), however two families prefer to hire labour (BI.RP.DH.F14.Q38.43). The majority of the families would need to hire transport for most of the materials (BI.RP.DH.F14.Q40b), although one family thinks that most of them are locally available (BI.RP.DH.F13.Q38). Only two families think that they would receive help from their community (BI.RP.DH.F12.Q43b), the majority of the families does not think the community members they helped in the past will help them in return (BI.RP.DH.F12.Q43c). As a result most families would need to hire labour for some or even in one case for most of the works to construct their desired house (BI.RP.DH.F14.Q43e).

The majority of the families prefer to build desired housing by themselves although two families would prefer to hire labour and transport to build the house for them. Although the majority prefers to build the desired house by themselves, they do not think they would be able to and require external labour.

**New housing:** All families have a new house, however they are not completed (II.RP.NH.F13.Q50.51). In the opinion the main reason was due to a lack of time (II.RP.NH.F13.Q51a), the majority thinks they will need a year to complete, where two families need a couple of weeks (II.RP.NH.F13.Q51e). Parts of the house that require completion are the roof, doors, windows and floor (II.RP.NH.F13.Q51g). Only two families think that they will receive help from the community to finish the house (II.RP.NH.F12.Q51j). Looking at the complexity of the works and lack of help from the community, all families answered that they will need to hire labour (II.RP.NH.F14.Q51i) to finish the house. All families had a brick house realized, where three found this to be a permanent house (II.RP.NH.F13.Q57). Only one family was present at the construction site every day, where the majority was not (II.RP.NH.F13.Q66). Almost every family thought they were involved enough (II.RP.NH.F13.Q68), due to the presence of other families members each day (II.RP.NH.F13.Q66a). The levels of involvement differ strongly between the families (II.RP.NH.F13.Q67), here family 8, 11 & **5** had a low participation and family 1&4 had a high level of participation (II.RP.NH.F13.Q67.69). All families received help from their family, friends and community members, although one family did not really received help (II.RP.NH.F12.Q70.70a). Although the control group answered they did receive help from the community in the control question they answered that only their family helped (II.RP.NH.F12.Q70.70a). All support group families considered the help substantial (II.RP.NH.F12.Q70.70c). The majority (one did not) of the families hired labour to construct their new house (II.RP.NH.F12.Q70h), in two cases for all of the works and in the others for some of the works (II.RP.NH.F12.Q70i).

All new build houses are incomplete due to a lack of time, and require substantial time and external labour to finalize. One of the reasons is that families do not think that they will receive help from the community. The majority of the families believes that although some family members participated marginally, other family members were present every day. All support group fmailies received help from their friends and community members, moreover perceived this as substantial help. However, the majority of the families stated that they depended on hired labour throughout the project.

#### Post-Realization Phase

**Ability to sustain house factor XV**

**Current Housing:­­­­** All the families are able to repair the walls of their current house by themselves, two families state that they can repair most of the house .(BI.PP.CH.F15.Q22b). The majority struggles to repair the roofs and in individual cases with doors, windows or cement floor (BI.PP.CH.F15.Q22c). One family thinks they can do all repairs.

Although self-build practice was present in current housing, the families think that they have limited abilities to repair their current house. All the parts that they cannot repair are manufactured external materials.

**Desired Housing:** None of the families would be able to extend or replicate their desired house (BI.PP.DH.F15.Q37). However, if they would be taught how to build their desired house they would repair their own house (BI.PP.DH.F15.Q47a).

The families would not be able to maintain, extend or replicate their desired house. However, they want to be able to maintain their desired house, although they would require training to do so. The stated materials and building techniques would require extensive training.

**New housing:** All support group families will finish their new house (II.PP.NH.F15.Q51l) and have the means to do so, the control group won’t be able to finish and does not have the means to (II.PP.NH.F15.Q51k). The support group families have the knowledge/skills to finish the house by themselves supported by their community, the support group does not (II.PP.NH.F15.Q51h.51j.71). However, the support group families needed the team to offer the knowledge and train them (II.PP.NH.F15.Q70l.72), moreover will all families need to hire labour (II.PP.NH.F15.Q51i). The majority (except control group) thinks that they will be able to repair the house and could afford the repairs if their income decreased (II.PP.NH.F15.Q73). Moreover, that they know how to extend an replicate the house by themselves (II.PP.NH.F15.Q74).

Besides the control group all families will have the means to finish their house. The teams that used the support were able to share knowledge and train skills with their families, joined by family and community members. Enabling them to maintain their house by themselves, which they could still afford if their income would become smaller. The control group team only marginally shared knowledge and was largely unable to train their family to build and maintain their house (mainly due to their absence). Although the family stated that they know how to repair most of the house, it is highly unlikely (lack of participation, knowledge and training) they would. Also confirmed in their inability to extend or replicate the house by themselves, moreover that they can’t afford the repairs if their income would decline.

**Housing functionality durability and aesthetics, factor XVI**

**Current and Desired Housing:**­­­­ The current houses vary between 30-105 square meters (BI.PP.CH.F16.Q3). The majority of the families think that the house is to small (BI.PP.CH.F16.Q5) where the main cause is their inability to let children (boys/girls) sleep separately (BI.PP.CH.F16.Q5b). None of the families are satisfied with their current house (BI.PP.CH.F16.Q18), mainly due to the size and in some case due to materials, comfort, rodents (BI.PP.CH.F16.Q18c). The majority of the families had to repair their walls and roof (BI.PP.CH.F16.Q21) in a rather high frequency (BI.PP.CH.F16.Q22). Where the walls and floors require a lot of repairs (BI.PP.CH.F16.Q22a). When asked what they would have done differently, all families listed external materials and two families answered that they would have preferred to have a modern house (BI.PP.DH.F16.Q26). As stated before this would require substantially less maintenance than their current housing (BI.PP.DH.F16.Q45).

Although current houses vary between the families, all families are unsatisfied with their house, the majority finds their houses too small and require more rooms (mainly for their children). Other reasons for dissatisfaction are: materials, comfort and rodents. In their current housing the walls, floors and roofs require the most frequent repairs. All families answered that if they could have been able (afford), they would have preferred to use different (external) materials, two families think that this would have enabled them to realize their desired house. One of the main reasons is that this would require less maintenance for the families.

**New housing:** In the new housing most of the families either got larger houses or comparable to their current housing (II.PP.NH.F16.Q53), the majority has an increased number of rooms (II.PP.NH.F16.Q54). They all find the new house large enough for the entire family (II.PP.NH.F16.Q55). When asked what they like about the new house the answers varied. Examples are (II.PP.NH.F16.Q75a): permanent house (2), design (2), new generation, size, self-contained, secure and ventilation (1)

In line with their desired housing, the majority of families realized a comparable or larger house size to their former housing. As an effect they have more rooms and did they all find the house large enough for the entire family. What they like most about the new housing is: permanence, design, new generation (modern), size, self-contained, secure and ventilation.

**Amount of maintenance, factor XVII**

As stated before, within the available timeframe of this research only the short-term maintenance could be assessed. The frequency of current housing repairs differs strongly between the families: weekly, twice a year, once a year and once every 5 years (BI.PP.CH.F17.Q22). Here all families find that the walls require the most maintenance, where in one case, the floor or roof (BI.PP.CH.F17.Q22a). The estimated frequency of repairs in their desired housing is quite different. Here all families think that their desired house would not require a lot of maintenance (BI.PP.DH.F17.Q44), stated frequencies are: once every two years, one once every five years and two families think that the house will be permanent, therefore won’t require repairs at all (BI.PP.DH.F17.Q45). In the Impact interview none of the questions directly inquired on maintenance frequency. However, when asked what the families liked about their house, some of them did referred to the permanency of the house (II.PP.CH.F17.Q75a).

*Although maintenance frequency in their current housing differs strongly between the families, they all found that the walls and floors demand the most repairs. That they all expect that the frequency of repairs in their desired housing would be substantially less or not required at all. The impact interview did not contain questions on how much maintenance the families think the new housing requires, however do the chosen materials indicate that most houses would require less maintenance. Moreover, did some of the families stated that they like the permanency the most on the new housing.*

**Housing Self-reliance, factor XVIII**

**Current housing:** Three families owned and two families rented their current house (BI.PP.CH.F18.Q1), however, all of them own a plot to build a new house on (BI.PP.CH.F18.Q6). All families repair their current house by themselves (BI.PP.CH.F18.Q23a), which in most cases mainly involves the walls and floors of the house (BI.PP.CH.F18.Q21). The majority of the families think that they could afford the repairs if their income diminishes (BI.PP.CH.F18.Q23b), however, this only counts for the non-manufactured natural materials (for walls and floors). For the other materials the majority would need to hire labour (BI.PP.CH.F18.Q23c) which the majority could not afford if their income diminishes (BI.PP.CH.F18.Q23f).

All families own a plot to build a new house on. They repair most of their current house by themselves, which they think they could afford even when their income diminishes. However, this only involves non-manufactured natural materials, for the other materials/solutions they do depend on hired labour. Which, they do not think they could afford if their income diminishes.

**Desired housing:** The majority of the families think they need the help of the team to help the family realize their desired housing (BI.PP.DH.F18.Q38a). In case the families answered that they would repair desired housing by themselves, two think they could afford and two think they could not afford repairs if their income diminishes (BI.PP.DH.F18.Q47b). All families would like to learn how to construct/repair their desired house (BI.PP.DH.F18.Q48).

The majority of the family’s needs external help to realize their desired housing. Two families do and two others do not think they could afford the repairs on their desired housing if their income diminishes. However, they all would like to learn how to construct/repair their desired house.

**New housing:** The families have a few comparable outcomes. All families stated that they have a new house, where one family stated that they have an incomplete house (BI.PP.NH.F18.Q50). Which is odd considering the fact that only the control group was able to finish the carcase shell of their house (no finishes). All families require labour to finish their house (BI.PP.NH.F18.Q51i) and kept their old house (BI.PP.NH.F18.Q52). There are also significant differences mainly between the control group and the support groups.

The control group could not afford to repair the house if their income declined (BI.PP.NH.F18.Q73a) and that they are unable to extend or replicate the house by themselves (BI.PP.NH.F18.Q74). Although the family think that only the shape and bricks resemble those of the community, it is clear that almost all materials resemble those of improved/desired housing examples in the community (BI.PP.NH.F18.Q76). A comparable discrepancy that can be observed in their ability to repair their house. Which they state in the interview to be high, however, considering their lack of means, involvement and available knowledge (repair/maintenance), seems highly unlikely.

The support groups found them to be able to repair their house by themselves (BI.PP.NH.F18.Q73), that they can afford them if their income diminishes (BI.PP.NH.F18.Q73a) and that they are largely able to extend or replicate the house by themselves (BI.PP.NH.F18.Q74). These families find only few similarities with other housing in the community, indicating that there new solutions are articulated (BI.PP.NH.F18.Q76). However, that there are similarities with desired housing examples in the community.

The majority of the families needed the help of the teams to articulate improved housing *(except family 11)*. However, there is a substantial difference in why they required the help. The control group family stated that they needed the team to design and finance the project, where the other families needed the help in offering new: brick technologies, type of foundation, measuring, motivation and initiative.

All families have a new house, although the majority has an incomplete house and therefore, kept their old house. Moreover, do they all require hired labour to finish their house. The control group does not know how to repair their new house, could not afford the repairs if their income diminishes. They almost solely copied local desired housing solutions and are therefore unable to extend or replicate their house.

The support group families are able to repair their house, they could afford them if their income diminishes and that they are largely able to extend or replicate the new house by themselves. These families found only few similarities between their new house with those available in the community.

All families needed external help (of the teams) to articulate improved housing, however their motives differ strongly. Here the control group explained that they needed the team to produce a design and donate funds. While the support groups needed the teams to offer: new brick technologies & types of foundation, for measuring, motivation and initiative.

**Housing Satisfaction, factor XIX**

**Current housing:** The average house (3 families) has 2 rooms (BI.PP.CH.F19.Q4) and is between 30-50 square meters (BI.PP.CH.F19.Q3), the families with more means have between 5-9 rooms (BI.PP.CH.F19.Q4) and 70-110 square meters BI.PP.CH.F19.Q3). All families stated that their not satisfied with their house (BI.PP.CH.F19.Q18), main reason is the housing size (BI.PP.CH.F19.Q5), mainly for their children or guests (BI.PP.CH.F19.Q5b).

**New housing:** The majority of the families’ new housing is larger (BI.PP.NH.F19.Q53), with more rooms (BI.PP.NH.F19.Q54), which they all perceive as sufficient for their families (BI.PP.NH.F19.Q55). All families (except family 8) are satisfied with their new house (BI.PP.NH.F19.Q75), when asked what they like or what makes their house special, the majority of the families stated: permanency and materials as important factors (BI.PP.NH.F19.Q75a.75b).

The most important parameter for the housing satisfaction was size and correlated the amount of rooms the house offers. When comparing the outcomes of the current with the new housing, all houses have either remained the same in size or have increased. The same counts for the amount of rooms, which have increased for all families. As an effect all families (except family 8) are satisfied with their house. Additional reasons for housing satisfaction are: permanency of the house and applied materials.

1. non-manufactured natural materials: are all natural materials which do not require an environmentally damaging manufacturing process and depend on available knowledge (inhabitant and/or community) and tools for application in housing construction. [↑](#footnote-ref-1)
2. manufactured non-natural materials: are all natural/non-natural materials which require an environmentally damaging manufacturing process and depend on knowledge and tools which are not available (inhabitant and/or community) for application in housing construction. [↑](#footnote-ref-2)
3. Housing status: all housing aspects that relate to improving one’s social position. [↑](#footnote-ref-3)