Report 2018/16

Implementing incentives for climate resilient housing among the urban poor in Vietnam – Evaluation Report with preliminary findings

For the Nordic Development Fund

Haakon Vennemo, Sofie Waage Skjeflo, Tran Huu Tuan, Tran Van Giai Phong, Tran Tuan Anh, Nina Bruvik Westberg and Jens Furuholmen

Document details

Title	Implementing incentives for climate resilient housing among the urban poor in Vietnam – Evaluation report with preliminary findings
Report number	2018/16
ISBN	978-82-8126-369-7
Authors	Haakon Vennemo, Tran Huu Tuan, Tran Van Giai Phong, Tran Tuan Anh, Sofie Waage Skjeflo, Nina Bruvik Westberg and Jens Furuholmen
Project manager	Haakon Vennemo
Quality assurance	John Skjelvik
Client	The Nordic Development Fund
Date of completion	May 18, 2018
Availability	Public
Keywords	Climate adaption, resilience, incentives, poverty, Vietnam

About Vista Analysis

Vista Analysis is a social science consultancy with its main emphasis on economic research, policy analysis and advice, and evaluations. We carry out projects to the highest professional standards, with independence and integrity. Our key thematic areas include climate change, energy, transport, urban planning and welfare issues.

Our employees have high academic credentials and broad experience within consulting. When needed we utilise an extensive network of companies and resource persons nationally and internationally. The company is fully employee-owned.

Preface

The project “Implementing incentives for climate resilient housing among the urban poor in Vietnam” is funded by the Nordic Development Fund and implemented by Vista Analysis in cooperation with ISET Vietnam, Hue College of Economics at Hue University, and Women’s Union of Da Nang, Vietnam. The project started in late April 2016 and is scheduled to run to October 31st, 2018.

This is an evaluation report of the incentive packages that have been implemented and tested among poor and near-poor households.

May 18, 2018

Haakon Vennemo
Project Manager
Vista Analysis

Contents

Figures

Tables

1 Introduction

This report presents our evaluation of the incentives that have been implemented and tested in Da Nang, Vietnam. Three incentive packages for investment in climate resilient housing have been designed and tested. Two of the packages are targeted to near-poor households, while the third package is targeted to poor households without the income generating capacity to repay a loan. Table 1.1 summarizes the contents of each incentive package.

Table 1.1 Contents of incentive packages (amounts in VND)

	Package 1	Package 2	Package 3
Loan size	30 000 000	20 000 000	0
Monthly interest	0.0075	0.0075	
Repayment period (months)	40	40	
Monthly loan payments by hhs	870 905	580 603	
Technical assistance	1 000 000	1 000 000	1 000 000
Grant		10 000 000	25 000 000
Co-financing	Cash and in-kind contributions by households	Cash and in-kind contributions by households	Matching funds from other donors, cash and in-kind contributions by households if possible

All three packages supply technical assistance to the households, including technical designs of the new house or retrofit, and technical assistance by local architects and local builders trained through the program to ensure that the technical design is correctly implemented. Package 1 offers a loan of maximum 30 million VND (about 1100 Euros), at a monthly interest of 0.75 % (about 9 % per year) and a repayment period of 40 months. Package 2 offers a maximum of 20 million VND loan, but in addition, a 10 million VND grant. Package 3 does not contain any loan, since it is targeted at households that do not have the capacity to repay a loan, but rather offers a larger grant of on average 25 million VND. This package relies on contributions from other programs targeted at the poor to co-finance the construction costs, and all three packages rely heavily on cash and in-kind contributions by the households themselves. The total costs of house retrofitting or reconstruction are recorded as part of the monitoring and evaluation of the program, as are the sources of co-financing. The design of incentive mechanisms and the procedure for selecting eligible households are further described in the Incentive mechanisms report (Vista Analysis, 2016b) and Monitoring report 1 (Vista Analysis, 2017).

This report presents the results from the evaluation of impacts of the implementation of the three incentive packages. The report is also a summary of the results from the workshop held in Da Nang in April 2018 to discuss preliminary results. We first present an assessment of impacts of the two incentive packages aimed

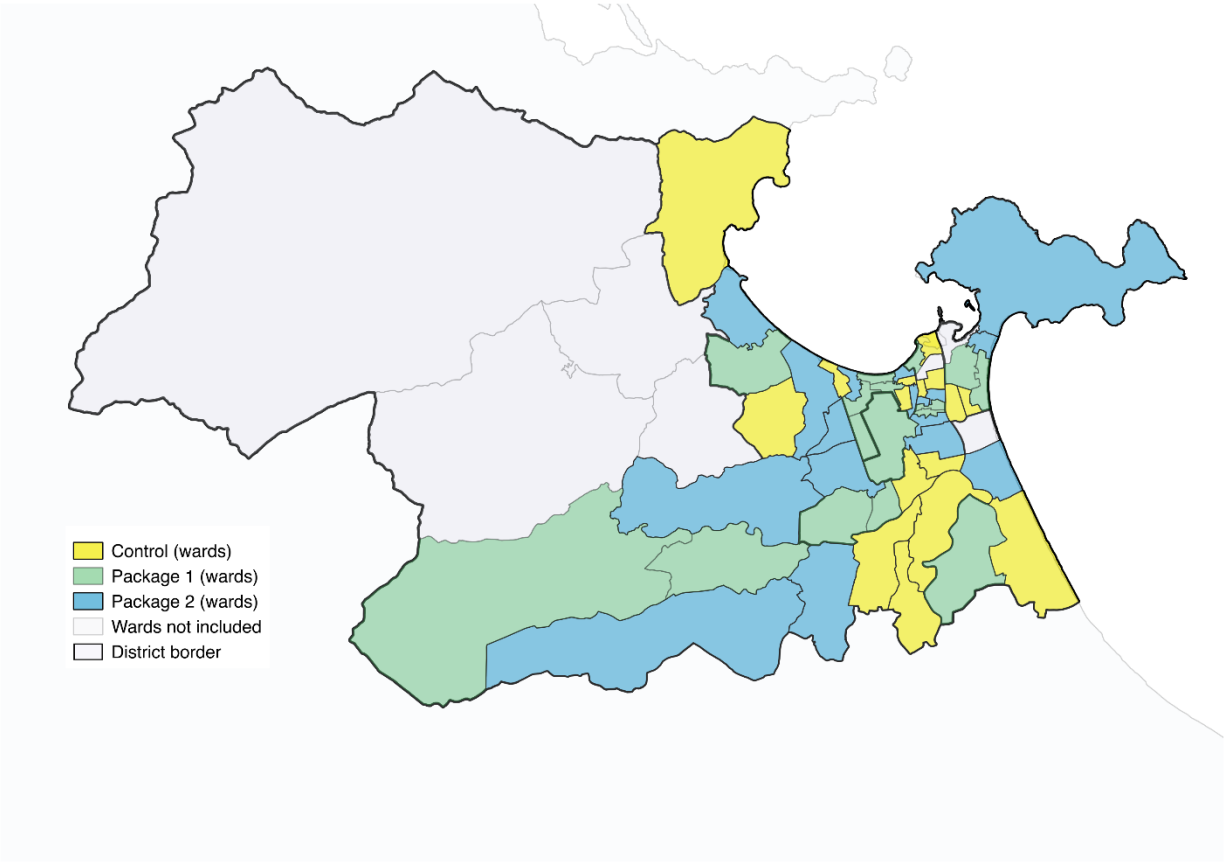
at near-poor households, consisting of combinations of information, technical assistance, microloans and grants. The assessment of the impacts of these two packages is based on a randomized control trial, further described in the next section. We then present a qualitative impact assessment of the implementation of the third incentive package aimed at poor households, including information, technical assistance and a grant. This evaluation is based on in-depth interviews with six households and focus group discussions with participants in the program as well as other stakeholders.

2 Impact assessment of implementation of incentive packages 1 and 2

The assessment of impacts of incentive packages 1 and 2 are based on a randomized control trial, where a total of 306 households nominated by the Women's Union in 49 wards and communes in Da Nang were randomly allocated to three groups: A control group, treatment group 1 that received Package 1, and treatment group 2 that received Package 2. To avoid problems of information spill-over and to ease implementation, we randomized the allocation to the three groups at the ward level rather than the individual household level. Prior to the allocation into the three groups, a baseline survey was conducted of all 306 households, collecting data on housing conditions, socioeconomic conditions, perceptions of resilience, risk preferences, life satisfaction and social capital. The evaluation approach and preliminary results from the baseline survey and tentative take-up rates are shown in Monitoring report 1 (Vista Analysis, 2017), and the draft paper "Demand for climate resilient housing – Experimental evidence from Vietnam" (Skjeflo et al., 2017).

Figure 2.1 shows the geographic distribution of the wards allocated to each of the three groups.

Figure 2.1 Map of wards and communes in Da Nang allocated to Package 1, Package 2 and control group



The procedure for implementing the incentive packages is described in detail in Monitoring report 1 (Vista Analysis, 2017). Following the implementation, a survey of all households was conducted in March and April 2018, collecting data on the same variables as in the baseline data, as well as the cost and sources of funding for housing improvements made by the households throughout the implementation period. The questionnaire for the follow-up survey is attached in Annex A.

At the time of the follow-up survey, eight households had sold their house and moved. One of these households has received support from the program through package 1 and retrofitted their house, but subsequently sold their house and moved. This household and two other households have not yet been surveyed at the time of writing this evaluation report but will be surveyed by mid May 2018. The remaining seven households that moved will not be surveyed. We are also aware that there may be minor data entry errors that will be discovered when doing the final analyses of the data in the next reporting period of the project. The results presented here are therefore preliminary.

2.1 Take-up of package 1 and 2 and types of improvements made

Final take-up of the two packages, defined as accepting the offer from the Women's Union, is presented in Table 2.1. As shown in the table, 14 of the households that were offered both a loan and a grant chose to

only take the grant. The rate of take-up is about 21 percent for package 1 and about 46 percent for package 2. Keeping in mind that the only difference between the two packages is that 10 million VND (or 367 Euro at the current exchange rate) of the 30 million VND loan from package 1 is offered as a grant in package 2, we find the difference in take-up to be surprisingly large. We also find that the households that accept either one of the packages are able to mobilize a large amount of co-financing, both cash and in-kind from other sources.

Table 2.1 Take-up of incentive packages 1 and 2

	Package 1 (30 mill. VND loan)	Package 2 (10 mill. VND grant and 20 mill. VND loan)		Total
		Grant and loan	Grant only	
Number of households accepting	21	35	14	70
Number of households not accepting	81	67		148

2.2 Impacts of incentive packages 1 and 2 on investment in climate resilient housing

2.2.1 Housing construction (new construction and retrofit)

The purpose of the incentive packages is to give households an incentive to invest in climate resilient housing. We are therefore not only interested in whether the households accepted the offer of loans and/or grants and the technical assistance, we are also interested in what kind of investments the households made to improve the resilience of their homes. The survey includes retailed registration of the type of improvements made, the presence of key resilience elements, as well as sources of funding and types of co-funding. To assess the impact of each incentive package on the decision to invest in climate resilience, we need to compare the investments made in the "treatment groups" with the control group.

The strength of our approach with randomly selecting which wards would be offered each package is that on average, the households in the control group should have the same characteristics as the households in each of the treatment groups. We can therefore expect that the investment in housing resilience we see in the control group represents a credible counterfactual to what the households in each of the treatment groups would do had they not been offered support through the program. It is, however, important to keep in mind how the households were selected – the Women's Union were asked to nominate near-poor households in each ward that were "near poor, with a need for house retrofitting or reconstruction to ensure storm resilience, and with the wish to carry out such retrofitting or reconstruction starting from March 2017". The control group thus does not represent an average near-poor household in Da Nang, but rather

households that are eligible for taking part in the Women's Union revolving fund program for resilient housing based on these criteria. We must keep this in mind when interpreting the results of the assessment of impact, since the results represent the impact of offering each incentive to this particular group of households. If either one of the incentive packages is rolled out to households selected for instance only by choosing random near-poor households, we cannot expect the same impact as we see from the evaluation of our pilot experience. This issue, the external validity of our results, will be further discussed below.

Table 2.2 presents the share of households in each of the three groups that did various types of housing improvements. Columns (1) – (3) show the shares in the control group, the group offered package 1 and the group offered package 2, respectively. Note that this is the share of all households in each group, not only the households that accepted, and each household can do more than one improvement. Column (4) presents the shares of all households.

Table 2.2 Housing improvements in 2017/2018 in control group versus each of the treatment groups

	(1) Control	(2) Treatment 1	(3) Treatment 2	(4) Overall	(1) vs. (2), p-value	(1) vs. (3), p-value	(2) vs. (3), p-value
New house constructed	0.143	0.098	0.189	0.144	0.340	0.393	0.063
	(0.037)	(0.030)	(0.038)	(0.020)			
Add an extra level	0.000	0.039	0.085	0.043	0.057	0.004	0.175
	(0.000)	(0.019)	(0.027)	(0.012)			
Elevate the house	0.022	0.029	0.009	0.020	0.747	0.476	0.297
	(0.015)	(0.017)	(0.009)	(0.008)			
Reinforce roof	0.044	0.108	0.047	0.067	0.099	0.915	0.102
	(0.022)	(0.031)	(0.021)	(0.014)			
Replace roof	0.077	0.088	0.160	0.110	0.777	0.075	0.117
	(0.028)	(0.028)	(0.036)	(0.018)			
Reinforce walls	0.011	0.069	0.066	0.050	0.045	0.051	0.941
	(0.011)	(0.025)	(0.024)	(0.013)			
Replace walls	0.011	0.000	0.000	0.003	0.291	0.282	
	(0.011)	(0.000)	(0.000)	(0.003)			
Replace or install solid posts, beams for support	0.000	0.000	0.009	0.003		0.355	0.328
	(0.000)	(0.000)	(0.009)	(0.003)			
Other improvements	0.088	0.078	0.104	0.090	0.813	0.709	0.528
	(0.030)	(0.027)	(0.030)	(0.017)			

We see that as many as 14 percent of the households in the control group have built a new house since the baseline survey was conducted. This sounds like a very high share, but again, we must keep in mind that all households selected as eligible for the program are households that expressed an interest for improving the storm resilience of their home, and that had a wish for starting the improvements from March 2017. The corresponding shares in the group of households that were offered package 1 and package 2 are about 10 percent and 20 percent, respectively. The three final columns of the table show the p-values from t-tests comparing the shares in the three groups. We see that the difference in the share of households that have built a new house between the control group and each of the treatment groups is not statistically significant at a five percent level of significance. The difference between the two treatment groups is marginally significant, with the share of households building a new house larger in treatment group 2 than treatment group 1, at 7,4 percent level of significance.

For the rest of the improvements, we see that the share of households in treatment group 1 that reinforced their walls is significantly higher than in the control group, and the share is marginally significant (with p-values between 5 and 10 percent) for adding an extra level to the house and reinforcing the roof. The results are similar when comparing the shares of improvements in the control group and the group that was offered package 2, however for this group the share of households that have replaced the roof is significantly higher than in the control group, while the difference is not statistically significant for the share that has reinforced the roof.

2.2.2 Housing resilience

Finding that a high share of households in the control group have done housing improvements does not necessarily imply that these households have obtained the same level of housing resilience as in the groups that were offered technical and financial support through the program. The household survey includes detailed registration of "resilience components" of the houses, before and after the program was introduced, through photographs and a checklist. The resilience checklist part of the survey is shown in Figure 2.2.

Figure 2.2 Resilience checklist from survey

I Housing resilience

The investigator has to look at the house carefully for taking photo and complete the CHECKLIST below:

No	*Resilience Component*	*Yes*	*No*	*Note (if any)*	*If this is household 295: Ask whether the resilience components were in place in December 2016*	
					Yes	*No*
1	*A solid room – the room built by reinforced-concrete (RC) frame and slab*	□	□		□	□
2	*Continuous/ring RC beam at the foundation level (asked the house owner whether it was built before, if unable to see)*	□	□		□	□
3	*Continuous/ring RC beam at the roof level (asked the house owner whether it was built before, if unable to see)*	□	□		□	□
4	*RC pillars inside walls (asked the house owner whether it was built before, if unable to see)*	□	□		□	□
5	*RC roof*	□	□		□	□
6	*Clay tile roof*	□	□		□	□
7	*Corrugated steel sheet roof*	□	□		□	□
8	*Roof bracings*	□	□		□	□

The photos taken need to view the main resilience components of the house. Each house has at least 3-5 photos, with the views as in the below pictures:

Outside | Inside | Roof | Veranda

The purpose of the checklist is to be able to assess the physical resilience of the house. Each element on the checklist gives an indication of how resilient the house is to strong winds. Whether or not the household has a "solid room" is perhaps the most important resilience element, since this room acts as a safe shelter for the household members in case of a very strong storm. The ring beams at the foundation and at the roof level, and the reinforced concrete (RC) pillars are all important for the overall stability of the house. When it comes to the roof, an RC roof is considered to be very resilient, whereas a corrugated steel sheet roof or a clay tile roof is vulnerable to strong winds unless combined with roof bracings.

Table 2.3 shows the share of households in each of the three groups that have each of the elements on the resilience checklist.

Table 2.3 Housing resilience elements in control group versus each of the treatment groups

	Control	Treatment 1	Treatment 2	Overall	(1) vs. (2), p-value	(1) vs. (3), p-value	(2) vs. (3), p-value
Solid room	0.231	0.267	0.385	0.297	0.562	0.021	0.074
	(0.044)	(0.044)	(0.048)	(0.027)			
Ring beam foundation	0.176	0.218	0.327	0.243	0.468	0.016	0.080
	(0.040)	(0.041)	(0.046)	(0.025)			
Ring beam roof	0.154	0.188	0.221	0.189	0.532	0.234	0.560
	(0.038)	(0.039)	(0.041)	(0.023)			

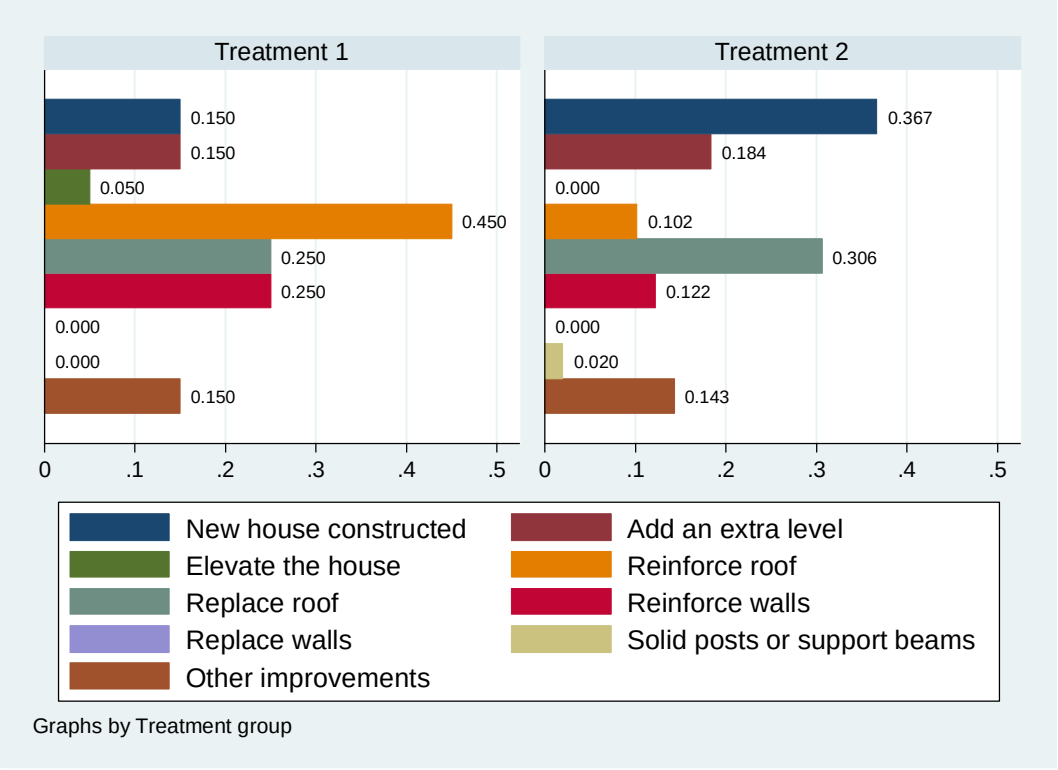
RC pillars	0.165	0.260	0.365	0.268	0.111	0.002	0.106
	(0.039)	(0.044)	(0.047)	(0.026)			
RC roof	0.121	0.178	0.126	0.142	0.270	0.911	0.303
	(0.034)	(0.038)	(0.033)	(0.020)			
Roof: clay tiles	0.067	0.059	0.123	0.084	0.838	0.189	0.116
	(0.026)	(0.024)	(0.032)	(0.016)			
Corrugated steel roof	0.846	0.851	0.798	0.831	0.918	0.385	0.317
	(0.038)	(0.036)	(0.040)	(0.022)			
Roof bracings	0.066	0.267	0.471	0.277	0.000	0.000	0.002
	(0.026)	(0.044)	(0.049)	(0.026)			

For the rest of the improvements, we see that the only improvement for which there is a statistically significant difference between the control group and the group that was offered package 1, is for roof bracings. About 7 percent of the households in the control group invested in roof bracings, while the corresponding shares in the two treatment groups is about 27 percent and 47 percent, respectively.

When comparing the shares of households with each resilience element in the control group and the group that was offered package 2, we see a clearer difference. A higher share of households in treatment group 2 have a solid room, a ring beam at the foundation, RC pillars and roof bracings. Given that we did not see a statistically significant difference between the share of households that have constructed a new house in the control group and treatment group 2, these results indicate that the households that were offered support from the program more frequently incorporated resilience elements in their housing improvements. The lack of differences between the control group and the group of households offered package 1 can largely be explained by the low take-up in this group (21 percent versus 46 percent in treatment group 2).

Looking more closely at the households that did accept the incentive packages, we see that there are some differences in terms of what type of improvements the households in the two groups did. Figure 2.3 shows the share of households that undertook different types of improvements, among the households that accepted each of the two incentive packages. The results indicate that the households that accepted the more generous package 2 on average invested in more costly improvements. About 37 percent of these households constructed a new house, while about 15 percent of those that accepted package 1 did the same. We also see that a higher share of households that accepted package 1 reinforced their roofs, while among those that accepted package 2, a higher share replaced their roof.

Figure 2.3 Share of households with different types of improvements among those that accepted



2.3 Preliminary results of impact assessment

As outlined in the Inception report (Vista Analysis, 2016a) the empirical analysis of the implementation of the test of incentive packages aims to answer two main research questions:

R3: What incentives are needed in order to enable (poor and) near poor households to invest in storm resilient housing?

R4: What are the short-run impacts of investing in storm resilient housing?

We have already touched upon the first question in the previous section of this report. As shown in the descriptive analysis, the take-up of the first incentive package is less than half of the take-up of the second incentive package. We also see that a substantial share of the households in the control group have undertaken housing improvements since the baseline survey. On the other hand, the results indicate that the households in the control group have to a lesser extent invested in housing elements that are important for enduring storm resilience. Looking at the impact of being offered either package 1 or package 2 (the *intention to treat effect*[1]) on various housing improvement outcomes confirms this impression. Table 2.4 shows the impact of being offered each package on the probability of doing any kind of housing improvement, on building a new house and on the number of resilience elements, defined as having a solid room,

[1] The intention to treat effect is the impact of offering the program to eligible households. The size of the effect thus depends on the take-up of the program, where the effect is lower the lower the take-up.

ring beam at foundation level, ring beam at roof level, RC pillars, RC roof and roof bracings. The number of resilience elements for each household thus varies from 0 to 5.

Table 2.4 Impact of offering each of the incentive packages on various housing improvement outcomes

	Housing improvement	New house constructed	Number of resilience elements (0-5)
Package 1	0.013	-0.045	0.395
	(0.083)	(0.055)	(0.377)
Package 2	0.208*	0.046	0.945**
	(0.090)	(0.053)	(0.293)
Observations	299	299	299

Standard errors in parentheses clustered at ward level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We see that households that were offered the second incentive package have a 21 percent higher probability of doing any kind of housing improvement than the households in the control group. We find no impact of being offered package 1. We do not find any impact of being offered either package on the probability of building a new house. However, we find a positive and significant impact of being offered package 2 on the number of resilience elements present in the house. Again, there is no significant impact of being offered package 1.

In line with our plan for analysis outlined in the inception report, we have also looked at impacts on monthly household expenditures excluding loan repayments, monthly savings (note that the savings data likely includes some data entry errors and will be checked before the final analysis), the number of habitable rooms in the house, and on the probability of feeling that there is enough room for the family in the house. As shown in Table 2.5, we do not find any statistically significant impact of being offered either package on any of these outcomes.

Our hypothesis was that the housing investment would decrease available expenditures for other goods, implying that the short run impact of the investment on consumption is negative. We will also investigate whether this hypothesis holds for investment in other assets, including investments in human capital through education. The preliminary results here show no significant impact (although the coefficient has the expected sign), but we will further investigate this after checking for data entry errors and controlling for baseline expenditures.

Regarding savings, on the one hand one could expect decreased savings in the short run because of the investment costs related to the housing improvements. On the other hand, the WU loan program includes a small amount of compulsory savings. In the short run, it is perhaps as expected that we do not find any impact, but this result also has to be considered preliminary. We also checked whether we could detect an impact on the number of rooms in the house, whether the households took the opportunity to improve the house in other ways than ensuring storm resilience. The preliminary results do not show any impact, and there is also no impact on the probability of considering that there is sufficient room for the family in the house.

Table 2.5 Impact of offering each incentive package on various indicators of the household's economic situation

	Monthly expenses excluding loan repayments	Monthly savings (1000 VND) assuming missing is zero	Number of habitable rooms	Enough room for family
Package 1	-281.106	146.143	0.298	0.157
	(605.566)	(98.943)	(0.242)	(0.094)
Package 2	-263.862	43.738	0.033	0.175
	(649.192)	(76.214)	(0.263)	(0.104)
Observations	295	299	298	293

Standard errors in parentheses clustered at ward level. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Finally, we are interested in the overall resilience of the households, not just their housing resilience. There are several approaches to assessing overall resilience, and this is a topic we will investigate further in the next phase of the project. Through the baseline and follow-up survey, we have information about several indicators of resilience, including subjective resilience and an index of life satisfaction. Figure 2.4 shows the questions that are included in the index of subjective resilience. The index is based on the household's assessment of several aspects of resilience, including housing resilience, capacity to recover, capacity to adapt, financial resilience, social capital and government support.

Figure 2.4 Components of subjective resilience index from survey

L Index of resilience: Please rate the following statements on scale ranging from 1 to 5. *1: Strongly disagree 2: Disagree 3: Neither agree nor disagree 4: Agree 5: Strongly Agree 6: don't know (don't give them the "don't know" option, only if they really need to use it. Try to get an answer first)*

If a storm such as Nari in 2013 occurred in my area tomorrow, my house would be safe. *[1-5]* **L1**	**If a storm such as Nari in 2013 occurred in my area tomorrow, my household would be able to fully recover from the damage caused by the storm within 6 months.** *[1-5]* **L2**	**If the frequency and intensity of storms was to significantly increase in the next 5 years, my household would have the ability to successfully adapt to the changing threats posed by the storms, even if this required us to completely change our way of life.** *[1-5]* **L3**	**If a storm such as Nari in 2013 occurred in my area tomorrow, my household would have access to sufficient financial resources to ensure that we fully recover from the threats posed by the storm.** *[1-5]* **L4**

If a storm such as Nari in 2013 occurred in my area tomorrow, my household would be able to draw on the support of family and friends to ensure that we fully recover from the damages caused by the storm. *[1-5]* **L5**	**If a storm such as Nari in 2013 occurred in my area tomorrow, my household would get sufficient support from the government to recover from the threats posed by the storm.** *[1-5]* **L6**	**My household has learned considerably from how we have dealt with past storm events. This knowledge is crucial in successfully dealing with future storm events.** *[1-5]* **L7**	**If a storm such as Nari in 2013 was to occur in my area tomorrow, my household would have access to early-warning information to ensure that we are fully prepared for the threats posed by the storm.** *[1-5]* **L8**

Table 2.6 shows the results from estimating the impact of being offered each of the incentive packages on the first statement in the resilience index described above, which is related to housing resilience. Here we

do se a positive and statistically significant impact of both package 1 and package 2, with a larger impact of package 2. However, we cannot rule out that the households felt obligated to give a positive response to this statement since they were responding to the Women's Union who had offered them support. For the index of overall life satisfaction, we only see a positive impact from being offered package 2, which is more in line with the results we have seen for actual housing improvements made. The fact that there is no significant impact of being offered either package on the overall resilience index (a simple average of the score on the five statements above) could be due to overall resilience consisting of several different components. Through the program that we have tested, we have only affected housing resilience, while the financial resilience may have been negatively impacted in the short run due to the investment cost. The financial benefits of the investment (the avoided storm damage) is only realized once a storm has taken place, and the household avoids the costs of repairs and loss of property from the storm damage. In the longer run, we therefore expect a positive impact on overall resilience.

Table 2.6 Impact of offering each incentive package on indicators and elements of subjective resilience

	Feeling of safety from storms and floods (1-5)	Overall life satisfaction (1-5)	Index of subjective resilience
Package 1	0.455*	0.207	1.375
	(0.211)	(0.158)	(1.757)
Package 2	0.613**	0.288*	2.075
	(0.195)	(0.141)	(1.826)
Observations	292	296	242

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.4 Summary of preliminary findings for packages 1 and 2

We have shown that the take-up of package 2 is more than twice as high as package 1, even though the only difference is that 10 million VND of the total support of 30 million is a grant in package 2, whereas the whole amount is a loan in package 1. The households that accepted package 1 on average do less expensive improvements to their house, e.g. retrofitting rather than replacing the roof, and doing other types of retrofits rather than building a new house.

We also see that a significant share of the households in the control group, i.e. the households that were not offered any support through the program, also did improvements and reconstructed their homes. For instance, there is no difference between the control group and the two treatment groups in the likelihood of doing any kind of improvement or the likelihood of constructing a new house in the period since the baseline survey. We should interpret these results in light of how eligible households were recruited: these are near-poor households that already had an interest in improving their home in the time-period the program was implemented. It is therefore not likely that we would see an equally high rate of housing improvements in a randomly selected group of near-poor households in Da Nang. However, comparing the

control group and the treatment groups does show us the impact of offering each package to households that are recruited in the same way as in this pilot test.

Because of the low take-up in the group that was offered package 1, and perhaps also because of the more limited investments made by these households, we do not find any impact of offering package 1 to this type of households on most of the outcome variables we have looked at. Our preliminary conclusion is that package 1 is too limited in terms of the financial support offered, and that the households do need in incentive in the form of a subsidy of a certain size to be willing to invest in resilient housing. This may be due to several factors.

The time horizon of the households may be short. Several studies have shown the poverty and the need to meet basic needs, makes the planning horizon of poor households shorter than non-poor households (they discount future income more than non-poor households).

Households may lack information about the probability of future storm damage. If households underestimate the likelihood that they will suffer storm damages in the future, they may need an additional financial incentive (a subsidy) to be willing to invest in storm resilient housing.

For some of the households that do not accept, the investment is not profitable. Maybe they live in an area that is less exposed to typhoons, or they have other investment needs that have a greater return (for instance investment in income generating activities) that they rightly prioritize. These are issues we hope to investigate further if we get the opportunity to follow the households over time.

For the households that were offered a grant in addition to a loan, the results are more promising. We find a positive impact on investment in resilience elements for these households, indicating that the households in the control group that for instance built a new house, were not able to improve their housing resilience to the extent of the households that were offered package 2. This is despite that less than half of the households accepted the package. We also find a positive impact of being offered package 2 on subjective housing resilience (how safe the household feels), and on overall life satisfaction.

In the final stage of the project we will revise this preliminary analysis. This will allow us to better understand the reasons for choosing not to accept and which households could be reached by scaling up the current program. This is important information that will feed into the ongoing discussion of how the Women's Union revolving fund will be used in the future. It is also likely to affect the design of similar programs that are being introduced in other coastal cities in Vietnam.

3 Impact assessment of implementation of incentive package 3

From 3 to 4 of April 2018, the Institute for Social and Environmental Transition (ISET) in collaboration with Hue University of Economics conducted an assessment to examine the efficiency of storm-resilient houses to the resilience and development of beneficiary households and communities. These houses were built in Da Nang City, Vietnam under the Package 3 of the project "*Implementing Incentives for Climate Resilient Housing Among the Urban Poor in Vietnam*" funded by the Nordic Development Fund (NDF) through the city Women's Union channel. Up to now, there are total 65 poor households in Da Nang receiving the grant from NDF to renovate or reconstruct their homes in accordance with climate resilience requirements. 24 houses were newly built, and 41 houses were retrofitted. The NDF project provided a grant of 30 million VND per newly built house and 20 million VND per retrofitted house.

The assessment focused on two wards of Da Nang, Vinh Trung and Hoa Minh Ward, where the NDF project has supported many poor households in reconstructing and retrofitting their homes. The assessment consisted of two focus group discussions (FGD), fifteen participants per group, and six in-depth household interviews. The FGDs saw the participation of a wide range of local stakeholders, from the ward people's committee leadership board, cadastral (land) unit, and fatherland front committee, to women's union, quarter heads, local builders and beneficiary households.

Figure 3.1 Location of Hoa Minh Ward (left) and Vinh Trung Ward (right) in Da Nang City

Source: Google Maps

Geographically, Hoa Minh Ward belongs to Lien Chieu District, and is located next to the sea where tropical storms originate and land in Da Nang. The Vinh Trung Ward, belonging to Thanh Khe District, is more inland than Hoa Minh and closer to the city center. Proportion of poor households in Hoa Minh is higher than in Vinh Trung and nearly 70 % land of Hoa Minh is used for relocation/resettlement purposes while most of residential land in Vinh Trung is the long-standing existing residential areas. Due to being located near the sea, many households in Hoa Minh are highly exposed to storm hazards and make housing of the poor in Hoa Minh, in general, more vulnerable to climate hazards compared to their counterparts in Vinh Trung Ward.

Figure 3.2 Focus group discussions in Vinh Trung and Hoa Minh Ward

Focus group discussion in Vinh Trung Ward

(conducted on 3 Apr 2018, morning)

Focus group discussion in Hoa Minh Ward

(conducted on 4 Apr 2018, morning)

In the FGDs, most of participants have highly appreciated the importance and necessity of the NDF project in supporting the poor within the ward in having a better and safer accommodation, particularly in the context of climate change where storm and flood risks are forecasted to be worsen in the future. As highlighted by them, the NDF project is one of the pioneer projects in Da Nang to integrate compulsory technical demands for risk reduction into housing construction alongside the financial support by grant provision. The cost of construction/renovation per house ranges from 30 to 125 million VND, dependent on the size of the house and the type of materials used by homeowners. The disbursement of the NDF grants to the poor households, even with a small amount of grant, has motivated a contribution of some additional local financial sources to fully cover the house construction expense. Forms of these contributed sources are diverse within the surveyed households, from grant to loan as seen in Figure 3.4 Statistical figures of 6 households surveyed.

Figure 3.3 Six households visited in the survey

In Vinh Trung Ward, Thanh Khe District *(Photos taken on 3 Apr 2018, afternoon)*

Household 1

Nguyen Thi Bach Tuyet

Household 2

Nguyen Thi Hoi

Household 3

Huynh Thi Lieu

In Hoa Minh Ward, Lien Chieu District *(Photos taken on 4 Apr 2018, afternoon)*

Household 4

Tran Thi Kim Hoa

Household 5

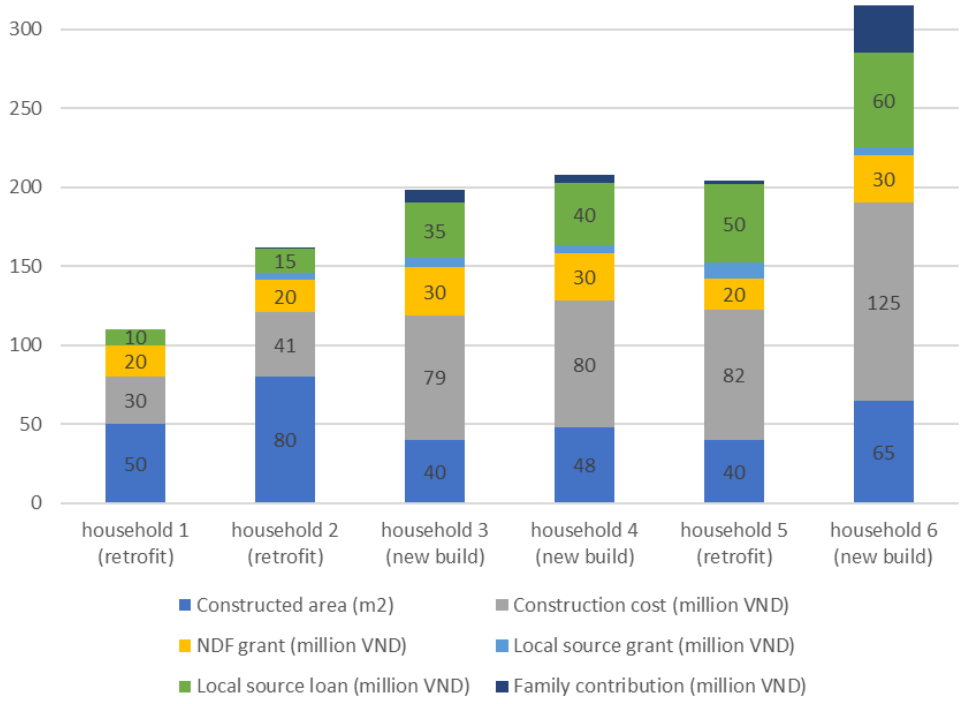
Luu Thi Sim

Household 6

Phan Thi Khanh Linh

The three households in Vinh Trung Ward, beside the NDF grant, received an additional amount of 5-6 million VND per household from the ward Fatherland Front for their housing improvement. Meanwhile, the three households in Hoa Minh Ward have not received the financial support from the ward Fatherland Front because the NDF project was implemented later than the time of selecting beneficiary households by the ward Fatherland Front, as explained by the ward WU representative. Instead, one household in Hoa Minh had received the grant of 10 million VND from a local enterprise (5 million), the quarter WU (3), and the ward Veteran (2) to combine with the NDF grant for covering construction cost. It means that the Package 3 of the project has mobilized a variety of local sources to match with the NDF grant for helping the poor in having a better (more resilient) house.

Figure 3.4 Statistical figures of 6 households surveyed



It was also found that the family's cash contribution is quite modest since they are economically poor and seems to have no saving for this purpose. Their contribution amount ranges from 0 to 8 million VND, except for one household adding about 30 million VND to the house construction thanks to their relative's financial assistance. There seems to be a correlation between the local source loan and the family contribution in which the higher family contribution the larger amount of loan the family could borrow from local sources (i.e. from relatives, brothers, sisters, friends, neighbours) (Figure 3.5). Similarly, there is a linkage between construction cost and family contribution where the higher family contribution the higher the construction cost of the house (Figure 3.6).

Figure 3.5 Correlation between local source loan and family contribution

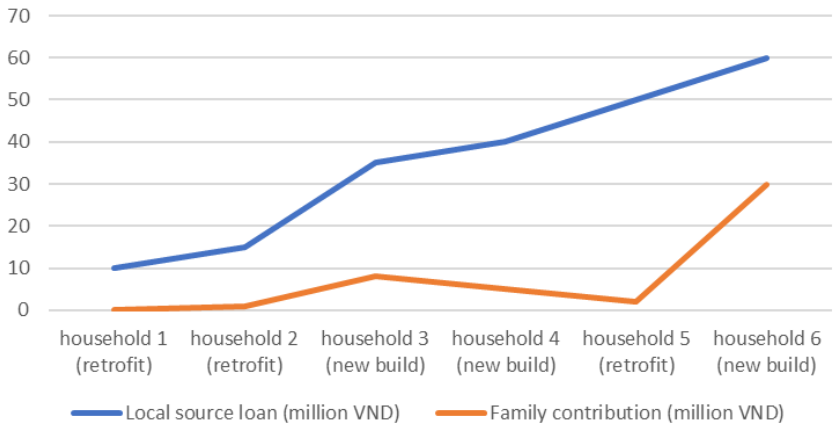
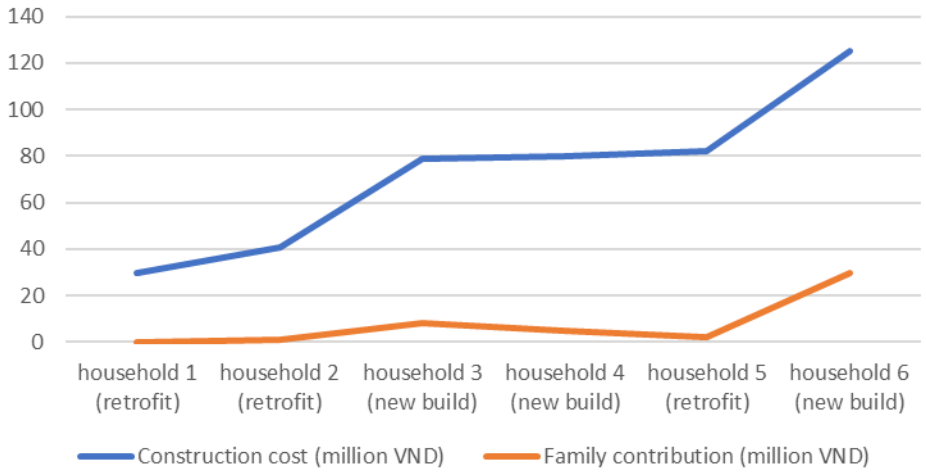


Figure 3.6 Correlation between construction cost and family contribution



The FGD in Vinh Trung Ward shows that there is a good policy issued by the involved district government (Thanh Khe district) in 2016 in which poor households could receive free assistance from the district urban management department and ward cadastral (land) unit in preparing housing design drawing files for applying building permit. Cost of applying building permit may be also exempted for the poor if they are assessed to be extremely difficult without financial capacity, as said by the ward-level cadastral unit representative. This policy is really meaningful to the poor in helping them improve their houses. However, this policy has been unknown to local Women's Union so that this resource was not mobilized in the NDF project where part of beneficiary households is the poor and each household still received one million VND for technical design/assistance. Meanwhile, this policy has not been initiated in Lien Chieu District, as deduced from the FGD in Hoa Minh.

Figure 3.7 Focus group discussion in Vinh Trung Ward, Thanh Khe District, Da Nang on April 3, 2018

The above finding indicates that some districts in Da Nang have released pertinent policies to support the poor in upgrading their homes and escaping from poverty. However, the issue of information exchange and sharing at the local levels, particularly amongst local administrative units, are not really effective so that such resources were easy to be not known and, thus, not used in low-income housing construction projects. In cases that this resource was mobilized, the cost of technical support per household would be reduced and, therefore, the project had more financial resource to invest in other purposes, such as extending the grant size for household, adding more safety-related measures, or purchasing risk/damage insurance. This reduced cost is also significant to safe housing microfinance programs for the poor and low income if preferential credit schemes are operated in combination with technical assistance.

The NDF project is the only one project up to now requiring the compulsory use of safety-related standards in housing construction in Thanh Khe District. This is the feature that makes the NDF project different from previous housing projects for the poor within the district area. In previous housing programs, financial aspects were paid more attention than technical ones, even in the areas prone to climate hazards (i.e. typhoon, flood), as said by the district WU representative. In previous housing projects for the poor, information/guidelines for housing design were usually disseminated to in-need households through quarter heads and local mass organizations such as Women's Union. In most cases, safety-related measures are encouraged but not required to follow in housing construction. This makes housing of the poor in these two wards particularly - and in Da Nang generally - still at-risk to future climate hazards.

As recommended by the FGD participants, there should be a requirement of using safety-related measures in housing construction when providing the poor with financial grant/loan, to ensure that their rebuilt/renovated houses are able to cope with future climate hazards. As said by the homeowners interviewed, there have been not many houses of the poor within their neighborhood integrating safety-related measures (i.e. storm shelter inclusion, wall and roof consolidation elements) in their house structure. Explained by them, it is mainly because of lacking technical requirements right from the beginning, lacking easy-to-understand and locally applicable technical guidelines, and lack of specific mechanisms for construction monitoring and construction quality control during the implementation.

In the six surveyed houses built by the NDF project for climate resilience enhancement, the most common technical principles used for these houses is (1) the construction of a "storm shelter" by upgrading an existing room inside the house (Figure 3.8), (2) the wall reinforcement by adding reinforced concrete posts

and beams inside walls, and (3) the roof protection by anchoring roof frames to the walls underneath and roof covers to roof frames. Within the inclusion of these elements, it generally generates an increase of 15-25% of total construction cost, as stated by the interviewed homeowners. Affirmed by them, these technical principles are really necessary to their house durability, easy to understand and, thus, easy to be incorporated/applied in housing construction if these guidelines are explained of how to use from the beginning (through training or information sessions). During the construction time, Women's Union in collaboration with Fatherland Front Committee had visited 2-3 times per house to check whether the construction was ongoing and, more importantly, safety-related measures were incorporated in construction. In addition, quarter heads also occasionally visited the house to capture the situation, construction progress, any problems happened during construction time, and report to ward authority, if needed.

Figure 3.8 Outside and inside one surveyed house

There is a portion of poor population in the two wards surveyed who has no land certificate, locally known as the *red book (sổ đỏ)*. This will affect the process of building permit application that is required for residential housing construction or renovation within the urban areas. In regulation, building permit is only granted to the land that have the *red book*. However, there is a flexibility in the building permit granting process to help the poor households without *red book* be able to get building permit. Specifically, the ward cadastral unit will check the legality of their land, whether its location is conformed to the city/district's current planning, and grant a written agreement letter to confirm the residential status of the land. The

district urban management department, the body granting building permit, will base on this letter to double check and grant building permit for the poor households who have no *red book*.

The support from local governments for the poor is also spreading to other works relating to construction activities. Housing of the poor living in the central business districts such as the Thanh Khe is usually located in densely constructed areas with narrow lanes/alleys and the transportation of materials to the site is quite difficult and easy to disturb neighboring households. In some cases, the ward urban rule team, locally called "*đội quy tắc đô thị*", will check construction activities and if the transportation of materials affects the public, the household will be fined or, more heavily, stop the construction. However, for the poor group, the local authority had worked with these urban rule teams before to ask their assistance in allowing the construction of poor people's houses. In addition, the ward fatherland front committee also works with local material shops (e.g. steel, cement, brick sellers)[2] to ask them to offer a cheaper cost for poor people's housing construction. In most cases, local material shops are willing to offer a lower price than the market price for this group, as said by one ward authority representative. Also, if any poor households want to develop economy alongside housing improvement, the ward authority will work with the Vietnam Bank for Social Policies to ask them to offer preferential loans for people's livelihood/economic development.

The household interviews saw the strong engagement of family members, family's relatives, and friends in housing construction work. 5 out of 6 houses visited received a 'free' labor contribution from the owners' brothers, sons and relatives and, thus, help reduce the labor cost significantly. All the surveyed households feel more secure in next rainy and stormy seasons since they have a safer home to live and protect their family. Thanks to having a better/more durable accommodation, the family members (e.g. sons, daughters) who have worked in other cities/provinces have sent money back to support their parents in purchasing more valuable items such as TV, computer, fridge, or kitchen appliances. It can be claimed that the overall target of housing support for the poor is not only the provision of the house itself but also the facilitation/enabling of other forms of assistance to fully help the family escape from poverty, improve living conditions and reach a sustainable development.

Migrant households who have moved from other places can be considered as local residents if they live within the ward for more than 6 months. Local authority is responsible for checking these households and help them gradually legalize their inhabitation if they want to live permanently in the ward. Social security policies, including housing-related support, will be applied to these households as the local ones who have the family record book issued by the city government. In the long term, the family record book of these migrant households will be issued by the city government to recognize them as the city citizens. The 6 households surveyed are not belonged to the migrant group.

In short, this assessment survey has indicated that, helping the poor in housing improvement is a multi-dimensional approach in which financial support should be incorporated with technical and institutional assistances to fully support them in building climate-resilient houses and, more importantly, sustaining their savings/investment for other wellbeing/development purposes of the family. The incentive package provided in Package 3 (grant + technical support), even with a small number of beneficiary households, has generated valuable contributions of local sources, from the cash contribution by the ward fatherland front committee, quarter WU, Veteran and local business enterprises, to the free-of-charge assistance of local

[2] These shops have been known by the ward fatherland front committee in the previous housing programs with similar helps.

authority in applying building permit, construction monitoring and asking a cheaper price from local material shops.

References

Skjeflo, Sofie; Tuan Huu Tran, Phong Van Giai Tran, Tuan Anh Tran, Haakon Vennemo, Nina Bruvik Westberg and Henrik Lindhjem (2017): Demand for climate-resilient housing: Experimental evidence from Vietnam. Working paper.

Vista Analysis (2016 a): Implementing incentive for climate resilient housing among the urban poor in Vietnam: Inception report. Report 2016/38. By Henrik Lindhjem, Tran Huu Tuan, Sofie Skjeflo, Haakon Vennemo, Tran Van Giai Phong and Tran Tuan Anh.

Vista Analysis (2016 b): Incentive mechanisms and plan for implementation. Report 2016/57. By Sofie Skjeflo, Tran Huu Tuan, Tran Van Giai Phong, Tran Tuan Anh, Haakon Vennemo and Henrik Lindhjem.

Vista Analysis (2017): Implementing incentives for climate resilient housing among the urban poor in Vietnam – Monitoring report 1. Report 2017/23. By Sofie Waage Skjeflo, Tran Huu Tuan, Tran Van Giai Phong, Tran Tuan Anh, Haakon Vennemo, Nina Bruvik Westberg and Jens Furuholmen.

A Annex
Questionnaire and follow-up survey

Household Questionnaire for Follow-up Survey (Round 2)

HOUSEHOLD IDENTIFICATION	NAME	CODE
Household head		
Name of quarter/village		
Ward/Commune		
District		
Name of respondent		Sex 1= Male 2=Female
Name of Enumerator		
Name of data entry person		
Date of interview		

	Date:……/……/2018 Start time:……:…… Finish time:……:……	Checked by: …… Approved: ……

INTRODUCTION TO THE HOUSEHOLD TO BE INTERVIEWED

The Women's Union of Da Nang carried out a survey in December 2016/January 2017 to investigate the need for housing that can withstand storms and floods in Da Nang City. This is a follow-up survey to see how the households are doing roughly one year after. The survey is supported by the Nordic Development Fund, and will provide information for Da Nang City's Resilience Strategy.

The Women's Union would like to collect information about your house and ask you some questions about your household. What you answer will not influence whether or not your household will be offered participation in any other program later.

TO THE ENUMERATORS

All columns that are marked in grey should be filled in with information from the baseline survey. This should be done before visiting and interviewing the household for this follow-up survey.

Module 1 Household background characteristics

A. Household members: Fill in columns A1-A3 from baseline survey. Add names in column A4 if new members have joined the household.

Member ID	Name of household member *Make a complete list of all individuals who normally live and eat their meals together in this household, and have stayed in the house more than 3 months during the past 12 months, starting with the head of the household** A1	Sex *1=Male 2=Female* A2	Age A3	Change in household *1=Member still present 2=New member 3=Member moved/left household 4=Member died 5=Other (specify)* A4	Relationship with HH head *1=Head 2= Husband 3= Wife 4= Son 4=Daughter 5=Grandchild 6=Brother 7=Sister 8=Niece 9= Nephew 10=Other relatives (specify)* A5	Marital status *1=Married 2=Widowed 3=Divorced 4= Separated 5=Never married* A6	Education				Main occupation *0=none 1= agriculture, aquaculture or fishing 2=salaried work 3=non-farming self employed business 4=pension 5=schooling 6=unemployed 7=informal, self-employment, 8=homemaker, 9=other (specify)* A11
							Is [NAME] currently in school? (School year 2017-18) *1=Yes 2=No If No, move to A9* A7	What grade is [NAME] attending? *1-12= Primary (1-12 yrs) 13= 1 year university 14=2 yrs uni 15=3 yrs uni 16= 4 yrs or more uni 18= 1 year college 19= 2 years col. 20 = 3 years or more of college* A8	Did [NAME] attend school last school year (2016-17)? *1=Yes 2=No* A9	What is the highest grade completed by [NAME]? *1-12: Primary (1-12 yrs) 13-17: University (1-4 yrs) 18= 1 year college 19= 2 years college 20 = 3 years or more of college* A10	
01											
02											
03											
04											
05											

Disclaimer cell – this must be set to BOTTOM MARGIN – set paragraph markers in the footer
so that it's high enough for the disclaimer to fit and so that the ToC table breaks properly across the next page (paragraph markers are needed for 2010 only)
Footer box – THIS IS NOT FLOATING ANYMORE

06											
07											
08											

**Make sure that the household head listed here is the same as on the front page of the survey.*

Module 2 Household socioeconomic condition

B. Income: What are the sources and approximate amounts of income of your household for January, 2018 and the last 12 months (up to now)?

Activity nr	3.2 Activity	Approximate income for the month of Jan, 2018 (1000 VND) B1	Approximate income in last 12 months (up to now) (1000 VND) B2
01	Cropping		
02	Livestock raising		
03	Aquaculture		
04	Fishing		
05	Non-farming self-employment business		
06	Waged labour		

07	Pension		
08	Remittance from family members or relatives *(not loans)*		
09	**4** Other (specify) **5** *(do not add any loans here, they will be asked about later)*:		
6			
7			
8			
9			
0			
1	***Total - please add up and check with respondent if total seems roughly ok***		

C. Household Assets: What assets does the household own? This includes household member's own personal items.

Asset nr	3.23 Item	Number of items owned last survey (Dec. 2016) [Fill in from baseline survey] C1	Have you sold, bought, lost, etc. an item since the last survey [Dec. 2016/Jan. 2017]? *CAN GIVE MORE THAN ONE ANSWER* *1=No change in item(s), own the same one(s) 2=Sold item, 2=Lost item, 3=Item destroyed/not functioning anymore, 4=Bought new item, 5=Received new item (gift), 6=Other, specify* C2	Number of items owned now C3	IF answered 4 to question C2: Approximately how much did you pay for the item? (1000 VND) C4
4 01	Motorbike				
6 02	Refrigerator				
03	Washing machine				
04	Air conditioner				

05	Telephone				
06	Mobile phone				
07	Television				

0 08	Computer				
2 09	Gas Stove				
3.34 10	5 Livestock				
3.36 11	7 Farm equipment				
3.38 12	9 Boat				
3.40 13	1 Equipment for non-farming self-employment business				

3.42 14	Others (specify):				
4	5				
6	7				
8	9				
0	1				

D. Expenditure in the household: In the month of January 2018, how much, if anything, did you or anyone in your household spend on the following?

Item nr	Item category	Amount spent (0 if nothing) in January 2018 *(1000 VND)* D1
01	Food, snacks and drinks (to eat at home and outside the home)	
03	Firewood, charcoal, paraffin, cooking gas or similar	
04	Electricity, water, phone, internet	
05	Tobacco, newspaper, magazines, lottery tickets, public transport	
06	Cosmetics, clothing, footwear	
07	Medicines and health services	
08	Education (uniforms, school fees, books, meals, school transportation etc.)	
09	Household items (cleaning products, linen, towels, carpets, mats, decorations etc.)	
10	Repairs and maintenance of household items or durables (incl. motorbike, bicycle etc.) *House repairs will be asked about later – do not add to this category*	
11	Religious or ceremonial costs (donations, funeral or wedding costs)	

12	Taxes for income, property etc.	
13	Household durables (tv, computer, refrigerator, kitchen equipment, furniture), car, motorbike, bicycle	
14	Livestock or agricultural inputs, equipment	
15	Input for business activities (non-farming self employment business)	
16	Savings (incl. to savings group in Women's Union's program)	
17	Loan repayments (incl. repayments to Women's Union's loan program)	
18	Others, please specify *(do not include repairs or building equipment for the house, will also be asked about later)*	

E. Debt and access to credit

E1 Number of loans the household had in Dec. 2016/Jan. 2017 [Fill in from baseline survey by counting number of loans in E1]: _____

E2 Has anyone in the household taken up a new loan after the last time we visited you and conducted the survey? (in 2017 and 2018): *1=Yes, 2=No* IF 2 PROCEED TO E8

Loan nr	How much did you borrow in 2017/2018? *(1000 VND)* E3	How much do you have left to repay? *(1000 VND)* E4	What is the purpose of the loan *1=House construction/retrofitting/repairs 2=Purchasing land 3=Business activities 4=Education expenses 5=Health expenses 6=Consumption expenses 7=Other, specify* E5	Who did you borrow from *1=Commercial bank 2=VBSP 3=Microcredit provider 4=Friends or family 5=Black market 6=Women's Union, 7=Other, specify* E6	Could you borrow more from this source if you wanted to? *1=Yes, 2=No, 3=Don't know* IF 2 OR 3 PROCEED TO E8 E7
01					
02					
03					
04					
05					
06					

E8 Why did you not take up any new loans?

1=No need, 2=No access because of bad debt history, 3= No access because of lack of collateral (e.g. no legal land tenure, red book etc.), 4= No access because not a prioritized household for accessing

loans from e.g. VBSP, 5=Access, but repayment conditions or interest rate do not fit 6=Wait to fully repay previous loan (currently in debt) before borrowing new loan, , 7=Other, specify

IF 1 (no need for loan), PROCEED TO F1

Purpose nr	If you could get a (another) loan, what purposes would you like to borrow money for? *1=House construction/retrofitting/repairs 2=Purchasing land 3=Business activities 4=Education expenses 5=Health expenses 6=Consumption expenses 7=Other, specify* E9	How much would you like to borrow for this purpose? *(1000 VND)* E10	How much do you think your household would be able to pay per month on a loan? (Interest and repayment/principal) *(1000 VND)* E11
01			
02			
03			
04			
05			
06			
07			

Module 3 Housing quality and resilience components

F Housing ownership and quality

	What is the ownership status of your house? *1=owned by this household, 2=rented, 3=borrowed for free, 4=employer provided, 5=other, specify* F1	How many years have you lived in this house? (Add one year to baseline survey answer) F2	Do you have any documentation of ownership of the property? *1= red book, 2= receipts of land tax payment, 3= signed lease, 4=land sale agreement, 5= other, specify, 6= no documentation at all* F3	In which year was the house built? F4	How many habitable rooms are there in the house? *Do not count bathrooms, toilets, storerooms or garage* F5
[Fill in answer from baseline survey]					
[Check with respondent if information form baseline survey is still correct - if there has been a change since baseline (Dec. 2016/Jan. 2017), fill in respondent's new answer]					

	Do you feel that you have enough room for all household members to live in the house at the same time? *1=yes, 2= no, 3=don't know* F6	The walls of the house are predominately made of what materials? *1=wood, 2=bricks, 3=cement block, 4=concrete, 5=other, specify* F7	The roof of the house is predominately made of what materials? *1=metal sheets, 2=concrete, 3=clay tile, 4=fibrocement, 5=other, specify* F8	Does the household have piped water? *1=yes, inside the house* *2= yes, outside the house* *3=no* *CAN GIVE MORE THAN ONE ANSWER* F9	What is the main toilet facility in the house? *1=outside latrine,* *2=pour flush toilet,* *3=flush toilet,* *4=other, specify* F10
[Fill in answer from baseline survey]					
[Check with respondent if information from baseline survey is still correct - if there has been a change since baseline (Dec. 2016/Jan. 2017), fill in respondent's new answer]					

H Storm damage in 2017 and 2018

Have you experienced any damage to your house due to storms in 2017 and 2018? *CAN GIVE MORE THAN ONE ANSWER FOR EACH STORM MENTIONED* *1= complete collapse, 2=roof, 3=roof structure, 4=walls/structure, 5=doors and window, 6= others, specify, 7=no* H1		*IF YES TO H1* Could you estimate the cost of the damage you experienced at that time? *(1000 VND)* H2	Did you experience any damage to belongings, livestock or crops due to previous storms? *CAN GIVE MORE THAN ONE ANSWER* *1=damage to belongings, 2=loss of livestock, 3=damage of crops, 4=others, specify, 5=no* H3	*IF YES TO H3* Could you estimate the cost of the damage you experienced at that time? *(1000 VND)* H4	Has anyone in your household experienced death, illness or injury related to storms in 2017 and 2018?*CAN GIVE MORE THAN ONE ANSWER* *1= death, 2= illness, 3=injury, 4=others, specify, 5=no* H5
Damrey (2017)					
Other, please specify:					

I Housing resilience

The investigator has to look at the house carefully for taking photo and complete the CHECKLIST below:

No	*Resilience Component*	*Yes*	*No*	*Note (if any)*	*If this is household 295: Ask whether the resilience components were in place in December 2016*	
					Yes	*No*
1	*A solid room – the room built by reinforced-concrete (RC) frame and slab*	☐	☐		☐	☐
2	*Continuous/ring RC beam at the foundation level (asked the house owner whether it was built before, if unable to see)*	☐	☐		☐	☐
3	*Continuous/ring RC beam at the roof level (asked the house owner whether it was built before, if unable to see)*	☐	☐		☐	☐
4	*RC pillars inside walls (asked the house owner whether it was built before, if unable to see)*	☐	☐		☐	☐
5	*RC roof*	☐	☐		☐	☐
6	*Clay tile roof*	☐	☐		☐	☐
7	*Corrugated steel sheet roof*	☐	☐		☐	☐
8	*Roof bracings*	☐	☐		☐	☐

The photos taken need to view the main resilience components of the house. Each house has at least 3-5 photos, with the views as in the below pictures:

Have you in 2017 and/or in 2018 done any improvements to your home to make it stronger in case of storms (winds and/or flooding)? *CAN GIVE MORE THAN ONE ANSWER* *1=rebuild entire home, 2=add an extra level, 3=elevate the house, 4=reinforce roof,* *5=replace roof, 6=reinforce walls 7=replace walls, 8=replace or install solid posts, beams for support, 9=other, specify, 10=no* I1		*IF ANSWER 1-9 IN PREVIOUS QUESTION* How much time was spent on doing these improvements?		*IF ANSWER 1-9 IN QUESTION I1* How much money was spent on doing these improvements? *(1000 VND)* I4	*IF ANSWER 1-9 IN QUESTION I1* What were the sources of the money spent? *CAN GIVE MORE THAN ONE ANSWER* *1=own cash, 2=savings, 3=loan from friends, family, 4=loan from VBSP or other bank, 5=loan from black market, 6= Women's Union NDF program, 7=others, specify* I5	*IF NO TO I1* Why have you not done any such improvements? *1=no need, already strong enough* *2=no need, not exposed to storms, 3=priority on other housing improvements, 4=no money for housing improvements, 5=other, specify* I6
		by you or any household members *(days of work, where one day is 8 hours)* I2	by friends, family etc. *(days of work, where one day is 8 hours)* I3			
Improvement number 01						
02						
03						

04					
05					
06					
07					
08					

When did you start making improvements to your house?		When did you finish making improvements to your house?		What is the total cost of the improvements?	Please indicate the amount of funding from each source [zero if no funding from this source]				
I7 Year *1=2017* *2=2018*	I8 Month *1=January, 2=February, 3=March, 4=April, 5=May, 6=June, 7=July, 8=August, 9=September, 10=October, 11=November, 12=December*	I9 Year *1=2017* *2=2018*	I10 Month *1=January, 2=February, 3=March, 4=April, 5=May, 6=June, 7=July, 8=August, 9=September, 10=October, 11=November, 12=December, 13=not finished*	I11 *(1000 VND)*	I12 Grant from WU *(1000 VND)*	I13 Loan from WU *Loan from (1000 VND)*	I14 Household contribution (cash and in-kind, e.g. labor input from hh members, family and friends) *(1000 VND)*	I15 Vietnam fatherland front, local donors, donations *(1000 VND)*	I16 Borrowed from other sources *(1000 VND)*

Other housing repairs and maintenance

In 2017 and 2018, did you do any other major improvements to your house (other than the improvements listed above)? *1=yes, 2=no* *If no move to J1*	What type of improvement did you do? *CAN GIVE MORE THAN ONE ANSWER* *1=new plumbing, kitchen or sanitary facilities, 2=new electrical system, 3=adding room(s), additional floor or other new parts to the house, 4=new roof, 5=wall repainting/recovering, 6=others, specify* I18	In 2017 and 2018, how much time was spent on other repairs and maintenance of your house		How much money was spent on these other repairs and maintenance of your house? *(1000 VND)* I21	What were the sources of the money spent? *CAN GIVE MORE THAN ONE ANSWER* *(1=own cash, 2=savings, 3=loan from friends, family, 4=loan from VBSP or other bank, 5=loan from black market, 6=loan from local mass organizations (WU, Fatherland Front, etc.), 7=others, specify)* I22
		by you or any household members *(days of work, where one day is 8 hours)*	by friends, family, relatives, neighbors etc. *(days of work, where one day is 8 hours)* I20		

I17		I19			

Module 4 Life satisfaction, social capital and resilience

J Life satisfaction:

The following question asks how satisfied you feel, on a scale from 1 to 5. *1: not at all satisfied, 2: partly satisfied, 3: satisfied, 4: more than satisfied, 5: very satisfied, 6: don't know* *(don't give them the "don't know" option, only if they really need to use it. Try to get an answer first)* Overall, how satisfied are you with your life as a whole these days? *[1-5]* J1

The following questions ask how satisfied you feel about specific aspects of your life, on a scale from 1 to 5. 1: not at all satisfied, 2: partly satisfied, 3: satisfied, 4: more than satisfied, 5: very satisfied, 6: don't know (don't give them the "don't know" option, only if they really need to use it. Try to get an answer first)

How satisfied are you with your standard of living? *[1-5]* J2	How satisfied are you with your health? *[1-5]* J3	How satisfied are you with what you are achieving in life? *[1-5]* J4	How satisfied are you with your personal relationships? *[1-5]* J5	How satisfied are you with how safe you feel from being affected by storms and floods?	How satisfied are you with feeling part of your community? *[1-5]* J7	How satisfied are you with your future security? *[1-5]* J8	How satisfied are you with the amount of time you have to do the things that you like doing?	How satisfied are you with the quality of your local environment? *[1-5]* J10	*For respondents who are employed only:* How satisfied are you with your job?

				[1-5] J6			*[1-5]* J9		*[1-5]* J11

K Social capital

About how many close friends would you say that you have these days? These are people that you feel at ease with, can talk to about private matters, or call on for help K1	If you suddenly needed to borrow a small amount of money, enough to pay for household expenses for one week, are there people beyond your immediate family who would be willing and able to provide this money? *1: Definitely 2: Probably 3: Unsure* *4: Probably not 5: Definitely not* K2	In the past 12 months, how many people with personal problems have turned to you for any form of assistance? K3

L Index of resilience: Please rate the following statements on scale ranging from 1 to 5. *1: Strongly disagree 2: Disagree 3: Neither agree nor disagree 4: Agree 5: Strongly Agree 6: don't know (don't give them the "don't know" option, only if they really need to use it. Try to get an answer first)*

If a storm such as Nari in 2013 occurred in my area tomorrow, my house would be safe. *[1-5]* L1	If a storm such as Nari in 2013 occurred in my area tomorrow, my household would be able to fully recover from the damage caused by the storm within 6 months. *[1-5]* L2	If the frequency and intensity of storms was to significantly increase in the next 5 years, my household would have the ability to successfully adapt to the changing threats posed by the storms, even if this required us to completely change our way of life. *[1-5]* L3	If a storm such as Nari in 2013 occurred in my area tomorrow, my household would have access to sufficient financial resources to ensure that we fully recover from the threats posed by the storm. *[1-5]* L4

If a storm such as Nari in 2013 occurred in my area tomorrow, my household would be able to draw on the support of family and friends to ensure that we fully recover from the damages caused by the storm. *[1-5]* L5	If a storm such as Nari in 2013 occurred in my area tomorrow, my household would get sufficient support from the government to recover from the threats posed by the storm. *[1-5]* L6	My household has learned considerably from how we have dealt with past storm events. This knowledge is crucial in successfully dealing with future storm events. *[1-5]* L7	If a storm such as Nari in 2013 was to occur in my area tomorrow, my household would have access to early-warning information to ensure that we are fully prepared for the threats posed by the storm. *[1-5]* L8

Disclaimer cell – this must be set to BOTTOM MARGIN – set paragraph markers in the footer
so that it's high enough for the disclaimer to fit and so that the ToC table breaks properly across the next page (paragraph markers are needed for 2010 only)
Footer box – THIS IS NOT FLOATING ANYMORE

M Perception of risk and risk preferences:

Do you think the frequency of the following natural phenomenon has been changing compared to 10 years ago? *1=No change, 2=decreasing, 3=increasing, 4=don't know*			Do you think the intensity of the following natural phenomenon has been changing compared to 10 years ago? *1=No change, 2=decreasing, 3=increasing, 4=don't know*		
Flood M1	Storm M2	Drought M3	Flood M4	Storm M5	Drought M6

How would you rate your willingness to take risks in general? *1= Completely unwilling to take risks, 2=partly unwilling to take risks, 3=somewhat unwilling to take risks, 4= neither willing or unwilling/in between, 5=somewhat willing to take risks, 6=partly willing to take risks, 7=Completely willing to take risks*
M7

Signature of Interviewee

Vista Analysis
Meltzersgate 4
0257 Oslo

post@vista-analyse.no
vista-analyse.no/en