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Research Report on

The Gender Responsiveness of Infrastructure Work and the Relationship between Infrastructure and Women's Unpaid Care Work: A Perspective from the North-West of Vietnam

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Research Report on

The Gender Responsiveness of Infrastructure Work and the Relationship between Infrastructure and Women's Unpaid Care Work: A Perspective from the North-West of Vietnam

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LIST OF ABBREVIATIONS AND ACRONYMS

AWEEV	: Project for Advancing Women's Economic Empowerment in Vietnam
CEMA	: Committee for Ethnic Minority Affairs
CPC	: Communal People's Committee
CVN	: CARE International in Vietnam
DEMA	: Provincial Department of Ethnic Minority Affairs
EM	: Ethnic minority
FGD	: Focus Group Discussion
Hh	: Household
M&R	: Maintenance and Repair
MARD	: Ministry of Agriculture and Rural Development
MOLISA	: Ministry of Labour, Invalids and Social Affairs
NGO	: Non-governmental organisation
NRD	: New Rural Development
NTP	: National Target Program
P4EM	: Partnership for Ethnic Minorities' Equitable and Inclusive Development
PC	: People's Committee
PDARD	: Provincial Department of Agriculture and Rural Development
RIC	: Centre for research on initiatives of community development
SPR	: Sustainable Poverty Reduction
UCW	: Unpaid care work
WB	: World Bank
WU	: Women's Union
UNW	: United Nations Entity for Gender Equality and the Empowerment of Women

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The findings and recommendations in this Report represent the views of the research team, based on the analysis of primary data obtained, and do not necessarily represent the views of CARE International in Vietnam or any other organisation or individual participating in this research.

Research team members include Pham Thai Hung, Hoang Xuan Thanh, Dang Thi Thanh Hoa, and Le Dinh Lap.

1 INTRODUCTION

CARE International in Vietnam (CVN) is implementing the Project for Advancing Women's Economic Empowerment in Vietnam (AWEEV). The project would target 2,635 ethnic minority (EM) women and men in eight communes across two provinces, namely Tien Nguyen, Xuan Minh, Yen Thanh, Tan Bac, Yen Binh, and Tan Trinh communes in Quang Binh district, Ha Giang province, and Ban Bo and Son Binh communes in Tam Duong district, Lau Chau province. This project promotes the economic rights of ethnic minority women and strengthens their participation in paid work through its outcomes, including (i) Enhanced promotion of economic rights for poor rural and ethnic minority women in Vietnam; (ii) Enhanced voice, leadership and participation of ethnic minority women in decisions related to productive economic activities at the household level; Improved capacity of poor ethnic minorities, especially women, to participate in income-generating activities from agricultural and non-agricultural livelihoods; and (iii) Enhanced ability of the poor, especially women, to save and borrow capital to support economic empowerment; and women's enhanced participation in entrepreneurship and start-up to benefit from the opportunities brought by economic growth.

An important objective of this Project is contributing to the reduction in women's burden of unpaid care work (UCW). To fulfill this objective, the Project firstly implements several research activities to understand UCW, and the impacts of the UCW burden on women in terms of access to infrastructure, use of public services, and engagement in paid work. The research findings will determine the future expenditure lines for AWEEV Project interventions in the Project locations. At the same time, the research findings and recommendations will also be widely shared to promote policy advocacy at all levels.

"Assessment on the gender-responsive infrastructure work and the impacts of rural infrastructure in the National Target Programs on women's UCW outcomes (with focus on the National Target Program for Socio-Economic Development in Ethnic Minority and Mountainous Areas (SEDEMA) in 2021-2030)" is one of the researches under this Project. This research was carried out in the context where the UCW burden is recognised as a factor contributing to gender inequality in Vietnam. The survey by ActionAid Vietnam in 2015, 2016, and 2017 shows that women spent on average 4.06 hours a day doing UCW, while the corresponding time for men was 2.36 hours a day.[1] This research aims to better understand the link between infrastructure and the time allocation on UCW. According to the research team, this was the first research conducted on this topic in Vietnam. The research was conducted in 3 provinces of Ha Giang, Lai Chau and Hoa Binh.

The following part of the Report presents the research objectives and methodology. Section 3 analyses the main findings on gender responsiveness of commune's (and village's) infrastructure work, the relationship between infrastructure work and women's time on UCW and paid work. Conclusions and some recommendations are provided at the end of the Report.

[1] ActionAid Vietnam, Bộ LĐTBXH(2017), Công việc chăm sóc không lương: tái phân bổ để phát triển bền vững. Văn phòng AAV tại Việt Nam: Hà Nội (ActionAid Vietnam, and MOLISA (2017), Unpaid Care Work: Redistribution for sustainable development. AAV Office in Viet Nam: Ha Noi)

2 OBJECTIVES AND METHODOLOGY

2.1 Research objectives

The main objective of this research is to assess the gender responsiveness level of rural infrastructure work and the connection between infrastructure and women's UCW time. At the same time, this research also explores if there is a link between infrastructure actions and the time women spend on unpaid care work and whether the investment in infrastructure has led to changes in women's voice and gender roles in the households and community or not research results are expected to be used for designing detailed activities for the AWEEV Project, and at the same time for sharing with policymakers and local authorities to promote investment in gender-responsive infrastructure and reduce the burden of unpaid care work f

The research focuses on the following key questions:

- What is the extent of gender responsiveness in investment in rural infrastructure, particularly those invested by the National Target Programs in 2016-2020? What are the factors affecting the extent of gender responsiveness to infrastructure work?[2]
- Is there any link between infrastructure investment and women's time on unpaid care work, especially for disadvantaged or vulnerable women? Under what conditions does investment in infrastructure reduce women's time on unpaid care work?
- If there are cases where investment in infrastructure results in a reduction in women's unpaid care work, how does the reduced time on unpaid care work affect the labour division in the households as well as women's voice and role in decision making in the households?
- What lessons can be learnt from gender-responsive infrastructure investment and the impact of infrastructure on women's unpaid care work? What recommendations can be made to implement the National Target Programs in 2021-2025, especially the National Target Program on Socio-Economic Development in Ethnic Minority and Mountainous Areas (NTP SEDEMA)?

[2] "Đáp ứng giới" is temporarily translated from "gender-responsive". Many reports use the phrase "gender-responsible" instead of "gender-responsive" as it is assumed that "gender-responsible" show a stronger commitment to gender equality than "gender-responsive". However, the phrase "gender-responsible" bears a connotation which is difficult to interpret in the specific context of Viet Nam, so the research team will use the phrase "gender-responsive" in this report.

2.2 Analytical Framework

Evidence on gender issues in infrastructure construction investment has confirmed the difference in the levels of participation in, use of and benefit from infrastructure work between men and women. This difference relates to gender inequality in labour division in the family, right to decision-making, ownership, and other cultural barriers. However, most infrastructure work, in reality, is not gender-sensitive because of the common awareness among stakeholders that both women and men will equally benefit from the infrastructure. The awareness of the possible differences in infrastructure impacts on socio-economic aspects of men and women has not been prevalent in practice. The positive outcomes of infrastructure actions for women are often out of expectation or unplanned (please refer to the reports of OECD 2004, AFDB 2009, OECD 2019, etc.). Viet Nam is also not an exception. Assessments on gender mainstreaming in the two National Target Programs on Sustainable Poverty Reduction and New Rural Development for the period 2016-2020 show that infrastructure investment is often "gender-neutral" (see CVN, Oxfam, SNV, 2018; UNW and VWU, 2020 on independent gender assessment in these two programs).[3],[4]

Based on existing documents on the link between infrastructure and UCW burden, the analytical framework for this research is presented in Figure 1. In this framework, infrastructure is classified into two main groups: social infrastructure (i.e., water supply facilities, schools, health stations...) and production infrastructure (such as roads, irrigation, markets, etc.). Usually, women can directly benefit more from social infrastructure actions than men (OCED, 2019).[5] Social infrastructure work can reduce the UCW burden. For instance, a domestic water facility in a village can reduce women's time fetching water, washing clothes and cooking.

Meanwhile, production infrastructure may directly affect the time spent on unpaid care work (e.g., a new road reduces transportation time to buy food or take children to school) or indirectly (i.e., a new road brings more opportunities to access paid work in the district centre and thus redistributes UCW burden to other household members). Depending on how users use these facilities, some infrastructure work can be classified into either social or production groups. For example, if a poor household uses an electricity facility for lighting and cooking, the work is a social infrastructure within that household. However, if that household uses electricity for production or processing agricultural products, the work is a production infrastructure. Infrastructure is considered "gender-responsive" or "gender-responsible" when women's concerns and needs are addressed in the selection, design, construction, operation or use of the infrastructure work.

According to the definitions of unpaid care work of ILO (2018) and DCED (2019), a woman's work time can be divided into three main groups, including (i) direct unpaid care work such as care of young children, the elderly and sick people in the family; (ii) indirect unpaid care work such as cooking, cleaning, fetching water for domestic use, or collecting firewood;[6] and (iii) paid work such as working for companies or business households. These three groups of work are often competing against each other. In a daily time fund, if a woman spends a lot of time on unpaid care work, the opportunity to access paid work will be limited. On the contrary, if the woman spends a lot of time on paid work, she will have to find a way to share/relocate the UCW burden with other family members. If this sharing is not feasible, it will affect the quality of the unpaid care work, or she will have to stay up later, get up earlier, not have a break at noon, etc..., to accomplish unpaid care work in the family. With the infrastructure classification and time use, the proposed analytical framework for this research is the foundation to address the above four research questions. Specifically:

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[3] CVN, Oxfam, and SNV (2018), Independent Evaluation Report on Gender Analysis of the National Target Programme on Sustainable Poverty Reduction (2016-2020). Thematic Report on the Mid-term Review of the National Target Programme on Sustainable Poverty Reduction.

[4] UNW and VWU (2020), Independent Gender Review of the National Target Programme on New Rural Development for the pediod of 2010-2020. Thematic Report in review of 10-year implementation of the new rural development.

[5] OCED (2019), *Gender Equality and Sustainable Infrastructure*, một báo cáo trình bày tại Hội đồng OECD về các SDG, ngày 07/03/2019

[6] UNW (2019) does not count activities such as fetching water or firewood as unpaid care work because it considers these activities are in the countable range in the national account system. But some other sources such as DCED (2019) argues that the national account system rarely takes into account these activities, and therefore these activities should be included in unpaid care work.

For Research Question 1, the extent of gender-responsive infrastructure work can be implemented by assessing women's participation and contribution in the investment and operation processes of the infrastructure work. The grey blocks in Figure 1 illustrate the five phases of an investment and the operation cycle of a typical infrastructure action (including planning, designing, investment, using and benefiting from the work). An infrastructure work is assessed as gender-responsive or not based on women's participation and contribution in planning (selection, work prioritization), designing, and construction. The extent of gender responsiveness of the work will also be assessed based on how women have access to and benefit from it. Overall, it will be assessed on the extent the infrastructure meets women's needs. This is an approach that fits for practice to assess the extent of gender-responsive infrastructure work in this research. This assessment is different from the "traditional" approach, where the extent of gender responsiveness is assessed based on the signs/indicators, e.g., is there a gender impact assessment in the design? Are there gender objectives in proposing the construction of the work? Is there a budget for gender responsiveness, a focal point responsible for monitoring gender issues during the design, construction, and operation (see OCED 2016)? According to the research team's experience, most of the small-scale infrastructure work in Viet Nam rural areas does not have information to assess the extent of gender responsiveness in line with that "traditional" approach.

For Research Questions 2 and 3, the impacts of infrastructure work on women's unpaid care work burden are made through the following main channels:

- Investing in social infrastructure such as domestic water supply facilities to reduce the time to fetch water, i.e., to reduce the time for indirect unpaid care work. With the saved time from reduced indirect UCW time, a woman can have more time for paid work (i.e., work as hired labourers for other households or do paid work) or spend more time on direct unpaid care work (such as care for children or the elderly).

- Investing in social infrastructures such as schools and health stations can reduce women's time on direct unpaid care work. For example, after a new school was built in the village or the neighbouring village, the woman does not have to take her children to/from school twice every day. If the school offers a day-boarding service (i.e., lunch provided and a full-day schedule available),, she can send her children to school all day and thus work in production factories or participate in the family's income-generating work.

- Investment in production infrastructure such as roads can reduce the time for indirect unpaid care work of women as going to the market, taking children to/from school or fetching water. At the same time, better traffic conditions can help provide women with more opportunities to access paid work in production and economic settings in the district centres. However, if women take paid work, it will affect their time fund for unpaid care work (directly or indirectly). By that time, if participating in the labour market and earning a salary improve women's voice and position in the families, their husbands and other members can share women's UCW burden. Then, there will be a "redistribution" of the UCW burden in the households and a reduction in women's UCW time. But if this "redistribution" is not feasible (as there is no other to do UCW or the husbands do not share the UCW burden), women will continue to be responsible for UCW in the families. There might be three possible consequences: either women have to quit their job, or they keep on trying to do the paid work and reduce their UCW time (resulting in decreased quality of UCW), or they try to stay up late, get up early to complete the UCW in the family.

Thus, investment in rural infrastructure likely affects women's UCW time through all three channels: reduction, recognition and redistribution – like the 3Rs approach in the theory of UCW.[7] The extent of infrastructure's impacts on UCW burden through these channels depends on the following factors:

[7] This approach assumes that in order to reduce women's UCW time and burden, 3Rs is required, that is, to reduce the time for unpaid care work (Reduction), increase the recognition of family members about the women's contribution to unpaid care work (Recognition), and redistribution of unpaid care work burden among family members (Redistribution).

Is the infrastructure under consideration gender-responsive or not (this is the result of the first research question)? If the project is highly gender-responsive, likely, its impact on women's UCW burden will also be greater.

Will there be policies or regulations to ensure women's participation and voice in the project prioritization, design and implementation? Several practical studies have shown that women's benefits from rural infrastructure largely depend on how the infrastructure is designed and implemented in practice (see ADB, 2018; AFDB, 2019). When women are involved in selecting infrastructure or are consulted during the design process of such infrastructure, the infrastructure actions that directly benefit women are often prioritized more (OECD, 2019). International organisations such as the World Bank (WB), Asian Development Bank (ADB), and African Development Bank (AFDB) all promote the request for gender-responsive infrastructure projects they fund. With those infrastructure projects, the assessments of gender impacts and the implementation of measures are required to ensure that the projects bring many benefits to women (and other disadvantaged groups). However, in almost other infrastructure actions, stakeholders often assume that women will "automatically" benefit from these actions the same way men do. Common arguments assume that since infrastructure work is a public commodity, there is no reason why women do not benefit as much as anyone else does. And so, stakeholders often do not realize or accept that the impacts and benefits of infrastructure work can be different for men and women (OECD, 2019). In Viet Nam, similar findings have been found for rural infrastructure actions under the National Target Programs on Sustainable Development and New Rural Development in 2016-2020.[8],[9]

There should be supporting mechanisms and institutions to follow regulations or requirements on gender responsiveness in the selection, design, construction, and operation of infrastructure work. Even if there are regulations to ensure gender-responsive infrastructure work, the implementation of those regulations requires the investment owners and management agencies to be competent to implement these regulations. There are many cases where the authorities wish to promote gender equality. Still, they neither have the appropriate methods nor budget to implement measures to increase gender responsiveness of infrastructure work (see CVN, Oxfam, SNV 2018 or UNW and VWU 2020). To overcome the limited capacity in implementing requirements to ensure gender-responsive infrastructure, ADB (2018) or some other international organisations made a requirement to include gender specialist(s) in the groups who design infrastructure projects and develop Gender Action Plan (GAP) to guide gender mainstreaming tasks during the implementation of infrastructure projects. ADB (2015) emphasizes the importance of experienced staff, resources, means of support, as well as the devotion of staff to promote gender equality and the extent of gender responsiveness among the agencies responsible for implementing infrastructure investment projects.

Are there gender stereotypes, and gender prejudice in the family and community that impede changes in household labour division or impede the voice and the role of women in decision-making processes affecting the UCW burden sharing and income generation for the households? Many infrastructure works may affect women's UCW time but even if an infrastructure project helps reduce women's UCW time and burden, whether it will result in increased opportunities for her to participate in the labour market or not depends on her power and voice household decisions. Or if the infrastructure work helps women access paid work, whether it will lead to a redistribution of UCW burden and an increased UCW sharing by other household members or not depends on her voice and position in the family. There remains inherent gender perception or stereotypes that UCW is women's responsibility. If the husband shares the UCW burden, it shows inferiority and affects his face in front of relatives, the community, etc... Therefore, gender prejudice and gender stereotype within the family and community may be the root cause that hinders women from participating in paid work outside their families and communities (World Bank and CEMA, 2019).

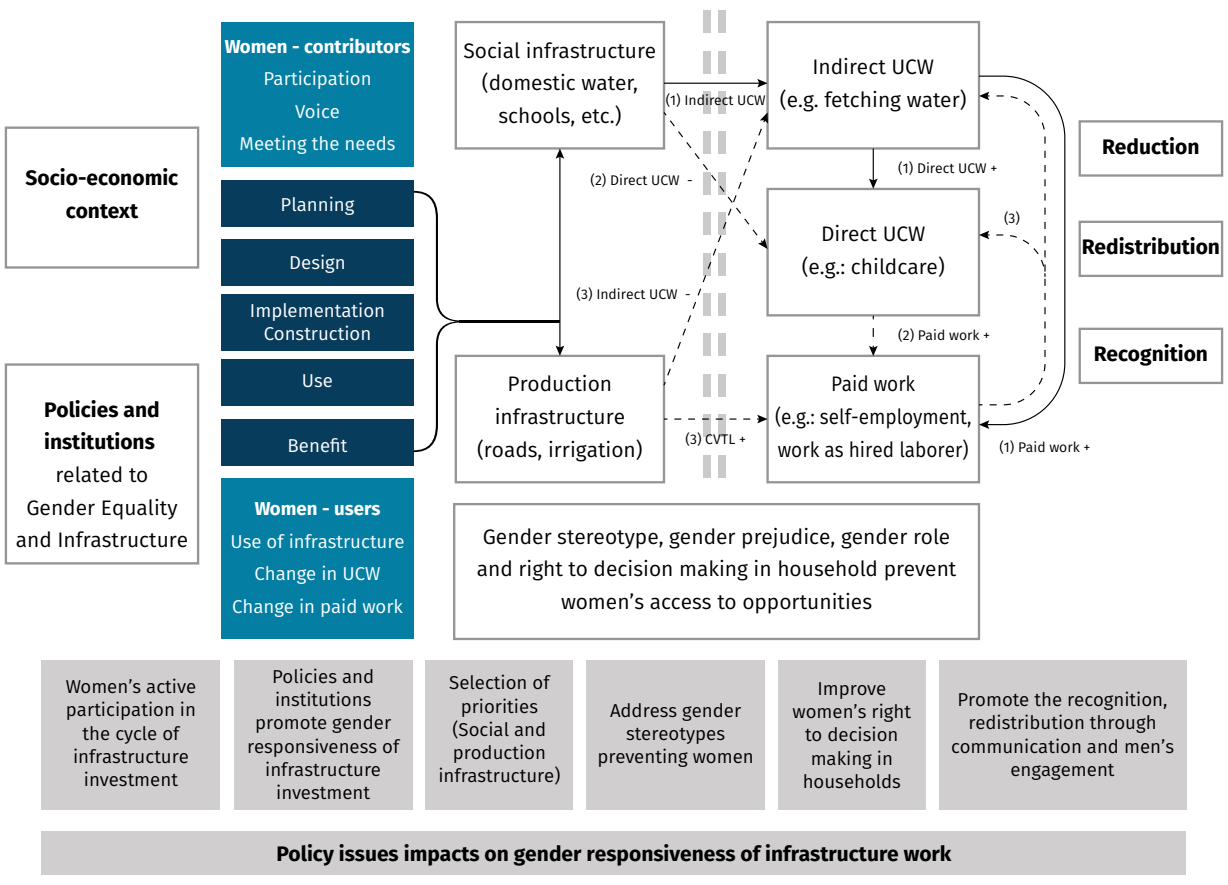
[8] CVN, Oxfam, and SNV (2018), ibid.

[9] UNW and VWU (2020), ibid.

For question 4, the blocks at the end of Figure 1 provide the background to analyse policy implications of the connection between infrastructure and women's UCW burden. For example, to increase the impacts of infrastructure work on reducing women's UCW burden, it requires a mechanism for women to actively participate in project prioritization, design, construction and operation. These blocks will be the main aspects of consideration to make policy recommendations to promote the impacts of infrastructure on reducing women's UCW. At the same time, based on this analytical framework, some important issues can be drawn in analysing the relationship between infrastructure investment and women's UCW burden. Specifically:

- It is necessary to understand existing policies and institutions related to the extent of gender responsiveness in infrastructure investment, especially the factors that promote or hinder the extent of gender responsiveness of the infrastructure;
- Social and production infrastructure generate different possible benefits for women and different impacts on women's UCW burden.
- The connection between the infrastructure and UCW needs to be reviewed in correlation with the paid work. Any changes in UCW burden may have a certain influence on the allocation of UCW time among household members and women's opportunities to access paid work.
- The influence of infrastructure work on UCW burden (and other benefits that infrastructure work can bring to women in general) may be hindered or restricted by gender prejudice or gender stereotype in the family and community.

Figure 1. Analytical framework on the impacts of infrastructure on UCW



2.3 Data collection methodology

2.3.1 Phase 1

The first phase of the research started in June 2021, focusing on a desk review on UCW, the development of an analytical framework, and data collection tools. The planned field survey was impossible because when Viet Nam was hit by the “fourth wave” of the COVID-19 pandemic. Unlike previous waves of infection, this 4th wave was at a nationwide scale and had an unprecedented high level of infection. With that infection wave, Viet Nam continued to implement a "zero COVID" strategy (until October 2021), so lockdown/social distancing measures were imposed on a large scale for most areas, making the plan to conduct the field survey impossible. Therefore, instead of a field survey as planned, the research team conducted a preliminary survey to (i) understand the infrastructure investment in the research area; and (ii) preliminarily assess the gender responsiveness level of infrastructure work. Initial survey findings were used to serve the data collection in phase 2 (as below) when the COVID-19 pandemic was under control.

The checklist on gender responsiveness level of infrastructure work was developed for phase 1, including two parts: (i) basic information about the commune and infrastructure investment in the commune; (ii) 10 questions about commune officers' assessment of gender responsiveness in different steps of the investment process for an infrastructure work: work selection, design, construction, maintenance and use. This survey was conducted in all 09 communes implementing the AWEEV Project and four communes in Da Bac and Kim Boi districts, Hoa Binh province (not the AWEEV Project site, but these communes conducted another project of CVN). This checklist covered all infrastructure work constructed in the communes from 2016 to 2020. This survey was conducted from 20 July to 2 August 2021 with 14 officers in charge of infrastructure work in the surveyed communes. The commune officers filled in the checklist and sent their responses to the consultant team via email. The checklist covered 423 infrastructure actions (nearly 30 actions/commune). The results of the checklist analysis were used as a basis to design the tools for data collection and survey sampling for phase 2 of the research.

Also in phase 1, the research team considered the possibility of conducting household surveys via phone. However, with the expected survey content, answering the intended research questions required in-depth interaction with women living in areas having difficult socio-economic conditions (including some women who needed interpreters). In addition, the Survey Questionnaire (see below), although simplified as much as possible, is still an 18-page (A4 paper) questionnaire. The questionnaire has many repeated question loops, that is, the same group of questions must be asked in turn for all infrastructure in the group. If these questions were written in full, then the length of the questionnaire would be about 30 pages. Under such conditions, it was not feasible to conduct an online or telephone interview. Therefore, with the consent of CVN, the research team designed a questionnaire and selected a sample for phase II while waiting for the COVID19 pandemic to be controlled to conduct a field survey in the research areas.

2.3.2. Phase 2

The second phase of the research started in mid-October 2021, when Vietnam shifted from the “zero COVID-19” strategy to a safe adaptation strategy.[10] Accordingly, lockdown and strict social distancing were lifted, and on-site field trips became feasible.

[10] Decree No. 128/2021/ND-CP dated 11 October 2021 regulating temporarily on "Safe adaptation, flexibility, effective control of the COVID-19 pandemic", Viet Nam no longer continued “zero COVID” strategy and the lockdown measures were gradually lifted. By mid-October 2021, Viet Nam defined infection zones according to

Survey sample

The survey sample for phase 2 covered six communes, including four CVN's AWEEV Project communes (Advancing Women's Economic Empowerment in Viet Nam) and two communes participating in P4EM Project (Partnership for Ethnic Minorities' Equitable and Inclusive Development) in Hoa Binh. Accordingly, the survey sample could provide diverse information from the North-West region with the highest percentage of ethnic minority people and the highest poverty rate in all economic regions across the country. The surveyed communes are in Tam Duong district [11] (Lai Chau province), Quang Binh district (Ha Giang), and Da Bac district (Hoa Binh). Surveyed communes in each district are as follows: one commune having a poverty rate equal to the district average, and one commune having a poverty rate higher than the district average rate. The surveyed communes are Yen Thanh and Tan Bac communes (Quang Binh district, Ha Giang province); Ban Bo and Then Sin communes (Tam Duong district, Lai Chau province); Trung Thanh commune, Cao Son (Da Bac district, Hoa Binh province). The research team selected two villages in each commune in the survey sample. The selection of the villages was based on the number of infrastructure actions in the village to ensure the diversity of types of infrastructure actions. At the same time, out of the two selected villages in the commune, one is located near the commune centre, and the other is far from the commune centre.[12] The list of communes and villages in the survey sample is presented in Annexe 1 of this Report. In each village, the research team selected 20 households that met the diversity requirements of household composition. Specifically, these 20 selected households consist of 10 poor households, 05 near-poor households or those just escaping poverty in the last 1-2 years; and five non-poor households. The diversity of composition of ethnic minority groups, households with the elderly and household-scale were ensured within every household group. Regarding the groups of poor households, near-poor households/households just escaping poverty, the criteria for female-headed households, households with people with disabilities, sick people, etc... were noted during the selection process. The total survey samples at the household level were 240 observations.

Information collection tools

This second phase of the research used two tools to collect information, including (i) a Household Questionnaire on the impacts of infrastructure on women's time use; and (ii) Focus Group Discussion (FGD) with commune officers and village women groups in the survey sample. These tools are provided in Annexe 2 of the Report. The basic contents of these tools are summarized as follows.

Questionnaire on the impacts of infrastructure on women's time use: this is a questionnaire at the household level. The respondents are women who are mainly responsible for UCW in the family and are usually wives of the household heads. The questionnaire consists of 18 A4-pages covering 03 main parts i.e., Part B - General information of the household; Part C – Women's participation in infrastructure work in the commune and village levels; and Part D - Infrastructure and Time Allocation. Part A includes some background information on demographics, household assets and participation in the labour market. Part B repeats the questions in the Checklist on infrastructure work similar to the first phase of the research. The results of Part B were compared with the results from the Checklist to examine the difference (if any) in the assessment of the commune officers and local people on the extent of gender responsiveness of the infrastructure work. Part D is the most important item of the questionnaire which is divided into different parts: travel time to do UCW; time for cooking, cleaning, clothes washing; time for taking care of children, the elderly and the sick; time to do the paid work; and some feelings about gender roles, women's voices in the family and community. Part D consists of multiple loops – a set of the

[11] Data from Survey on socio-economic situation of 53 ethnic minority groups, 2019.

[12] Villages near the commune centres usually have lower poverty rate compared to the communes' average poverty rate; villagers in these villagers also benefit from many infrastructure work constructed in the commune centre. Villages being far from the commune ceters are villages having more difficult condition than those near the centres, the level of benefits from work in the commune centre of villagers in these villages is also lower than those in the villages in the commune centres.

same questions that apply to each work among the respective groups of infrastructure work. After being revised based on CVN's comments and the trial survey results (see below), the printed questionnaires were converted into online questionnaires on the Kototoolbox platform.

Group discussions (FGDs) with the commune officers: Group discussions with commune officers were conducted with officers in the Commune Management Unit of the National Target Programs, cadastral-construction officers, office-statistical officers, accountants, and some other officers as assigned by the Commune People's Committees. FGDs focused on assessing the level of participation of commune women in the investment process in infrastructure; the level of use of the infrastructure, and the infrastructure's impacts on women's UCW time. In addition, the research team also conducted FGDs with household representatives in the village. These FGDs focused on sharing household UCW, and the impacts of infrastructure in the communes and villages on women's UCW burden.

Organisation of survey

In collaboration with CVN, the research team recruited three groups of enumerators to conduct the household survey in phase 2. Due to difficulties from travel restrictions between provinces, there was a team of two to three enumerators in each province. These enumerators are officers of the Provincial Department of Agriculture and Rural Development (PDARD), the Women's Union at district/commune levels, and commune officers. These enumerators participated in the baseline survey and some other research activities of the AVEEW Project and most of them have experience conducting household surveys using smartphones or tablets. After selecting enumerators, the research team conducted a 2-day training course for enumerators in Ha Giang, Lai Chau and enumerators in Hoa Binh from 19 - 25 October 2021. In this training course, the questionnaires were piloted to adjust and further complete the questionnaires and let enumerators practice interviewing skills.

As originally planned, the household survey will be conducted from 1 November 2021 to 12 November 2021. Surveys in Hoa Binh and Lai Chau were completed on schedule. However, the survey in Ha Giang was interrupted due to the rapid and sudden increase in the number of COVID-19 infected cases in this province, leading to lockdown and travel restrictions. With 50 unanswered questionnaires (accounting for nearly 21% of the total household survey sample), completing the survey in Ha Giang was necessary to ensure the quality of the survey information. Finally, travel in Ha Giang was also eased at the end of November 2021, and the official survey was completed on 4 December 2021. However, there were still 04 households in Ha Giang located in the restricted travel area, so the number of survey samples at the household level was 236, equivalent to 98% of the initially expected sample size.

In addition to the household survey, the research team conducted online FGDs in Lai Chau and Ha Giang (from 21 October to 4 November 2021). In each commune, the team holds an FGD with commune officers. In each village, the research team, with the support of commune officers and CVN focal point in the field, conducted an FGD with 5-6 women representing several households in the village. Despite the support of commune officers and the CVN focal point in organizing, there were still many difficulties during the village FGDs. It took a lot of time to organise and ensure connection due to 3G instability and create an open atmosphere in the discussion. As a result, village FGDs usually lasted about 2.5 to 3 hours, almost half of which was spent on organisation/preparation. However, the content of the information collected from these FGDs was quite useful and significantly complemented the information collected from the household survey. Particularly in Hoa Binh province, due to the ease of COVID-19 prevention and control measures, the research team conducted face-to-face FGDs to have the opportunity to grasp the issue more intensively. In all 3 provinces, the research team organised 06 FGDs with 20 commune officers and 12 FGDs in 12 villages and 90 village women.

2.3.3 Some limitations of the research

Before analysing the results, it is necessary to address some research limitations. First, the infrastructure impacts on the UCW time were very challenging to measure. To answer the questions about the impact of infrastructure on time spent on UCW, respondents must self-compare the time spent on these UCW groups before the infrastructure was constructed. These responses were based on their feeling and relative estimation. To address this limitation, the only way was to set up a "time log" at the time before and after the completion of the infrastructure. Accordingly, it was needed to conduct a controlled experiment, corresponding to the investment cycle of infrastructure instead of the planned research activities.

This research did not measure in detail the UCW time. As the number of infrastructures in communes and villages is quite high, to assess the impacts of infrastructure on women's UCW time, the group of questions on time measurement could not be as detailed as the surveys to measure the UCW time. With other surveys, the time intervals were usually 10-minute or 15-minute, and time logs were recorded for all days of the week.[13] In this research, commonly asked questions were about the perception/feeling of the change in time spent on some specific workgroups since the operation of infrastructure.

Finally, it should be noted that this is a small-scale research activity, with the sample being selected in areas where CVN conducts its projects. The surveyed areas (commune, village) were selected based on the criteria ensuring the diversity of socio-economic conditions; Households in the survey sample were also selected in a way that ensured diversity among household types (as mentioned in the above "survey sample" section). Therefore, although the survey sample was diverse, it was not representative of the surveyed area. The research team attempted to address this constraint by conducting FGDs with commune officers and women representatives in villages to obtain more qualitative information to supplement the questionnaire survey findings. However, the research results should be considered suggestive rather than representative of the impacts of infrastructure on UCW. It should be further noted that this research only focused on a few areas in the North - West region.

In contrast, the characteristics of ethnicity, socioeconomic and natural conditions of different regions across the country are different. For example, the Central Highland infrastructure construction will differ a lot from the North-West region due to topography, climate, and population distribution characteristics. In addition, the levels of connection between the most disadvantaged villages, communes in the North-Western region and economic centres are also different from that in the central and the Central Highlands, etc. Therefore, infrastructure impacts on women's time allocation will vary by region. Given available resources, this research was only conducted in some locations in the North-West region. However, this research is one of the first researches on the impacts of infrastructure on women's UCW burden in Vietnam, so it is suggestive for future research.

[13] Many surveys also measure at many times during the year to limit the influence of seasonal factors on the results. For example, in the harvest season, the time pressure on paid work will be high, and the time to carry out the UCW will be less, compared to leisure-season.

3 KEY RESULTS

3.1 Characteristics of surveyed households

able 1 (below) shows some basic characteristics of the households. The average size of the surveyed household is 4.6 persons. Based on the 2021 poverty and near-poor data, the rate of poor households in the survey sample was 30%, and that of near-poor households was 29.6%. The poor and near-poor rates in the survey sample are significantly higher than the average rates in the North-West region (i.e., 17.2 and 10% respectively).[14] This reflected a reality that AWEEV and P4EM Project communes are in more difficult conditions than average in the region. Nearly 94% of the survey sample are households headed by an ethnic minority. The Tay, Dao, and Thai ethnic groups account for the largest survey samples (24.2%, 20.3%, and 19.9% , respectively). The Kinh ethnic group only accounts for nearly 6% of the total sample. The rest include Lao (8.1%), Muong (6%), Pa Then (7.6%), Mong (2.5%), and other ethnic groups (nearly 5.5%, i.e., Nung (3%), La Chi (1.3%), Giay (0.8%) and Lu (0.4%)).

Table 1. Basic characteristics of the survey sample

	%	No. of observations (n=236)
% households by three provinces		
Ha Giang	30.9	73
Lai Chau	33.9	80
Hoa Binh	35.2	83
Household size		
Average household size	4.6	236
Number of individuals	1114	236
Percentage of poor households	30.1	71
Percentage of near-poor households	29.6	70
Percentage of non-poor households	40.3	95
Percentage (%) of ethnic minority households	94.1	222

Source: Survey on infrastructure and UCW time in November 2021

[14] According to Decision No. 576/QD-LDTBXH dated 18 May 2021 of the Ministry of Labor, Invalids and Social Affairs on the results of the survey of poor and near-poor households in 2020 (applicable to 2021) based on the multi-dimensional poverty line in the period period 2016-2020.

Some characteristics of households in the survey sample are summarized in Table 2. The mean age of the household heads in the sample is 44 years old (the mean year of birth is 1977). Data on the marital status of the household heads show that only 0.4% are unmarried. Most of the household heads in the survey sample (92.6%) are married, and 7% are widowed. Among 7% widowed, there is none from female-headed households raising young children, but they all are household heads who are the elderly living with their children. Because the average age of the household head is quite high, 18.4% of the household heads have never attended school, and 20.6% have not graduated from primary school. Thus, household heads having no training certificates/degrees in the survey sample is as high as 39%. Notably, the percentage of household heads who completed post-secondary education is very low (only 11%). In terms of employment status, 95% of household heads in the survey sample are doing the jobs that generate income for their households, of which, 83% are self-employed, and 11% engage in regular paid jobs.

Table 2. Some characteristics of households in the survey sample

	Unit (%, year)	Number of observations
The average age of household head (years old)	44	236
Marital status of household head		
Never married	0.4	1
Married	92.6	211
Widowed	7	16
Highest education level of household head		
Never go to school	18.4	42
Not finish primary school	20.6	47
Primary school or grade 4 in the 10/10 system	19.3	44
Lower secondary school or grade 7 in the 10/10 system	30.7	70
Upper secondary school (high school) or grade 10 in the 10/10 system	8.3	19
Professional secondary school	0.4	1
College, university, post-graduate	2.2	5
Employment status of household head		
Working	94.9	224
Loss of work ability	2.5	6
Being unemployed	2.5	6

Source: Survey on infrastructure and UCW time in November 2021

Table 3 below summarizes the labour market engagement of surveyed households (this table covers all household members engaging in paid jobs, or income-generating self-employment). On average, there are 2.8 persons in each household engaging in income-generating work, i.e., 61% of household members (compared to the average household size) are involved in income-generating activities. Regarding primary occupation (which is the job that uses most of their time), 79.3% are working in agriculture/farming, only 20.7% in non-agriculture/non-farm work. It is noted that this is the summarized labour structure of all family members who are working, including family members who are migrating far to work (usually in non-agriculture). Therefore, 20.7% of non-agricultural jobs are very low (compared to the average rate of non-agricultural jobs of 67%).[15] In terms of work nature, 10.6% of people participating in income-generating jobs have regular paid jobs; nearly 7% have irregular paid jobs, and 82.8% are self-employed. In terms of work location, 82.6% of people involve in income-generating jobs in their villages. This figure of 82.6% roughly coincides with the 82.8% of self-employed people. This suggests that the main group of people's jobs in the surveyed area is farming on their own in their villages. Notably, 10.6% of people participating in income-generating jobs are in other provinces, this percentage equals the proportion of people with regular paid jobs. Therefore, labourers who migrate to other provinces to work have regular and paid jobs. This also suggests very limited opportunities for paid jobs in AWEEV locations (and Da Bac, Hoa Binh province).

Table 3. Employment status of adults in the survey sample

	Main/Primary work		Secondary work	
	%	N	%	N
Percentage of those who are working	59.5	662	84.6	662
Work aspects				
Farming	79.3	525	69.0	457
Non-farming	20.7	137	15.6	103
Who do they work for?				
1. Self-employment	82.8	548	84.3	472
2. Frequent paid job	10.6	70	6.6	37
3. Non-frequent paid job	6.6	44	9.1	51
Work location				
1. In the village	82.6	547	86.2	482
2. In the commune	3.6	24	2.7	15
3. In the district	1.5	10	1.4	8
4. In another district in this province	1.4	9	1.3	7
5. In another province	10.6	70	8.4	47
6. In another country	0.3	2	0.0	0

Source: Survey on infrastructure and UCW time in November 2021

[15] The percentage of over 15-year-old labourers having a job according to the annual Labour Force Survey 2020 of the General Statistics Office

In areas with difficult socio-economic conditions and one main job, people do multiple other jobs for income, namely: nearly 84.6% also do another (second) job/work. The survey results also indicate that with the second jobs, there is no big difference in the employment structure (between agriculture and non-agriculture) and types of employment (self-employment, regularly paid jobs, and irregular paid jobs) or working locations compared to the primary/main jobs.

Household asset ownership is an important indicator of living standards. At the same time, ownership of assets is also a factor affecting UCW time. For example, a household having a motorbike would not spend as much time picking up and dropping off their children at the same school as a household without a motorbike would do. The survey findings on household asset ownership are summarized in below Table 4. Regarding durable assets: motorbikes, electric fans, and electric rice cookers are the most common ones (more than two-thirds of households own these assets). 64.8% of households have smartphones while 44.6% have basic mobile phones (the sum of these two rates is greater than 100% because some have both basic mobile phones and smartphones). The numbers of households owning refrigerators and televisions are also quite high (63.1% and 56% respectively). Notably, only 1.7% of households have computers (either desktop or laptop). There is a significant difference in the possession percentage of durable assets between the poor/near-poor and non-poor households. The percentage of non-poor households having valuable assets such as motorbikes, refrigerators, televisions, washing machines, smartphones, etc., is much higher than that of poor and near-poor households (depending on the types of assets, the differences range from 1.5 to 35 percentage points).

Almost all households use grid electricity for lighting; 55.5% of households use electricity to boil water, cook, etc. Only 3% use electricity for production and business. Gas/biogas, firewood, coal or oil are the main cooking fuels in everyday life. Households tend to use a combination of different fuels. Survey data show that 100% of households use coal/oil; 92.4% use firewood and rice straw, and 72% use gas/biogas. Compared to poor and near-poor households, the non-poor households in the survey sample use more electricity and gas/biogas for cooking. Regarding domestic water, households also use a combination of different sources. 100% of households use village public taps (of which 21.2% of households have access to clean water supply to their houses). In addition to the public taps in the village, 76.3% of households in the surveyed area still use water from springs and streams – these are natural water sources that are neither filtered nor protected, so they do not meet the requirements for clean water in daily life. The survey results show no significant difference between the poor/near-poor households and non-poor groups in water sources used daily. Regarding sanitary conditions, nearly 64% of households have flush toilets with a septic tank, and sewage pipes; nearly 20% of households have temporary toilets, and notably, 9.3% of households have no private toilets. Compared with poor and near-poor households, the percentage of non-poor households having flush toilets with a septic tank and sewage pipes is significantly higher (77.9% versus 54.6%).

Table 4. Status of household asset ownership

	Average /mean	Poor, near poo	Non-poor
Durable Assets			
Television	55.9	41.8	76.8
Refrigerator	63.1	48.9	84.2
Air conditioner	0.8	0.0	2.1
Bicycle	21.6	19.1	25.3
Motorcycle	91.1	89.4	93.7
Fan	87.3	83.0	93.7
Radio	1.3	0.7	2.1
Electric cooker	77.5	70.2	88.4
Washing machine	15.7	3.5	33.7
Basic mobile phone	44.5	44.7	44.2
Smartphone	64.8	56.0	77.9
Computer, laptop	1.7	0.0	4.2
Internet connection	31.8	22.7	45.3
Electricity use			
Use electricity for lighting	99.6	100.0	98.9
Use for cooking	55.5	44.0	72.6
Use in production and business	3.0	2.1	4.2
Cooking fuel			
Electric stove	17.4	9.2	29.5
Gas/biogas	72.0	63.1	85.3
Firewood, leaves, and straw	92.4	98.6	83.2
Coal, oil	100.0	100.0	100.0
Use of clean domestic water			
Clean water supplied to your house	21.2	19.9	23.2
Clean water in public places	100.0	100.0	100.0

Drilling well	1.3	0.0	3.2
Dug well	4.7	3.5	6.3
Rainwater	2.1	0.7	4.2
Spring/stream water	76.3	78.0	73.7
Toilet			
Flush toilet with a septic tank, sewage pipes	64.0	54.6	77.9
Toilet having walls and roof to cover, prevent faeces/waste	6.8	7.1	6.3
Temporary toilet	19.9	27.0	9.5
No toilet	9.3	11.3	6.3

Source: Survey on infrastructure and UCW time in November 2021

3.2 Infrastructure investment at the grassroots level

3.2.1 Overview of infrastructure at commune and village levels

In the surveyed area, communes are in difficult socio-economic conditions, and the infrastructure investment at the commune and village levels was mainly from the resources of the National Target Program (NTP) for Sustainable Poverty Reduction (NTP-SPR) and the National Target Program for New Rural Development (NTP-NRD).

With the NTP-SPR 2016-2020, infrastructure investment support from the central budget to extremely difficult communes eligible for investment by Program 135 was on average VND1-1.2 billion/commune/year. Local budgets and community contributions to infrastructure under the NTP-SPR were low, almost insignificant. During the 2016-2020 period, the Program 135 under the NTP-SPR invested in constructing 14,760 works, of which transportation accounted for 57.5%, community houses: 17.4%, irrigation: 9.6%, school facilities: 8.4%, domestic water: 2.8%, electricity work: 0.9%, and health facilities: 0.7% (MOLISA, 2020).[16] Thus, it can be seen that production infrastructure work (transportation, irrigation) accounted for nearly 67% of all work in Program 135; and the remaining 33% were social infrastructure work. In terms of decentralization, about 70% of extremely difficult communes were decentralized and allocated capital resources to act as investment owners of infrastructure work, however, the actual level of decentralization at the commune level was not high in some provinces (for example, the commune level (communes) was assigned to be the investment owner, but then the commune level authorized the district level to be the investment owner, or the commune level mainly just signed on the documents drafted by the contractors) (MOLISA, 2020). Therefore, the extent of participation of the community in general and the participation of women in particular in infrastructure work remained limited. Decree No. 161/2016/ND-CP promulgates a specific mechanism for investment in the construction of infrastructure under the NTPs to assign the communities and local groups of construction workers to build infrastructure to meet the requirements of this Decree. But the application of a specific investment mechanism in the NTP-SPR remained limited (please refer to more details in the 2018 CVN Reports[17] and 2021 Hoang Xuan Thanh report[18]).

[16] MOLISA (2020), Report on the implementation results of NTP-SPR 2016-2020.

[17] CARE (2018), Báo cáo: Đánh giá độc lập giữa kỳ Phân cấp và trao quyền trong Chương trình 135: Phát hiện chính và khuyến nghị

[18] Hoàng Xuân Thành (2021), Báo cáo nền Đề xuất đổi mới cơ chế đặc thù trong quản lý, tổ chức thực hiện dự án đầu tư xây dựng có sự tham gia của cộng đồng trong các chương trình mục tiêu quốc gia.

In the NTP-NRD, the capital resource for infrastructure investment in communes was significantly higher than that of the NTP-SPR. On average, in the 2011 – 2020 period, a commune received direct support from the state budget at all levels for the construction of new rural areas of VND4-5 billion per year, of which investment capital for infrastructure construction accounted for 60-75%. The capital source structure was also more diverse with local funding and public contributions accounting for a large proportion.[19] In the 2016-2020 period, the infrastructure investment in the NTP-NRD comprised investments in rural transportation facilities (51.2%), schools (13.8%), cultural facilities (13.8%), irrigation facilities (7.7%), concentrated clean water facilities (5.6%) (Government, 2021).[20] Like the NTP-SPR, production infrastructure accounted for a high proportion (nearly 60%). In terms of implementation, almost 100% of communes were decentralized to act as investment owners of new rural construction works in their localities (except for some cases of inter-communal infrastructure, or infrastructure with high technical requirements). The extent of decentralization for communes to be investment owners of new rural development infrastructure was higher than in the NTP-SPR (CVN, 2018)[21]. Unlike the NTP-SPR which mostly invested 100% of its funds in extremely difficult communes and villages; NTP-NRD only supported partial investment costs of the work, making the public contribution important. People contributed in many forms (labour, land donation, on-site construction materials, cash) to develop new rural infrastructure in their areas.

According to some independent assessments on gender in implementing the NTP-NRD and NTP-SPR, the extent of gender responsiveness of infrastructure work is limited. In the NTP-SPR in 2016-2020, the Program stipulated that priority should be given to infrastructure projects having many beneficiaries being the poor, women of poor households and poor ethnic minority households. However, as stated in the independent evaluation report of CVN, Oxfam, and SNV (2018), this priority was only on principle/ on paper, there were no specific guidelines for implementation. Therefore, this principle of prioritizing projects having many beneficiaries being women was not realized in practice. The infrastructure investment in the NTP-SPR was therefore assessed as "gender-neutral". In the NTP-NRD in 2010-2020, UNW and Vietnam Women's Union (VNU) (2021) emphasized that the Program did not mention gender issues in the early phase of 2010-2015. Gender issues have only been included in the NTP-NRD since 2016 with the supplement of criterion 18.6 on gender equality. The content of criterion 18.6 was independent of other criteria. Gender issues were not reflected in other NRD criteria. Therefore, the infrastructure in the NTP-NRD was also assessed as "gender-neutral".

In addition to the two NTPs, infrastructure in communes with difficult socio-economic conditions has also been funded by several development partners and non-governmental organizations (NGOs) projects. Large-scale funding projects such as the World Bank's Northern Mountains Poverty Reduction Project and the Central and Central Highland Poverty Reduction Project, some UN Fund for Agricultural Development usually apply the mechanism of decentralization and empowerment for communes and villages to implement small-scale infrastructure work. Under these projects, infrastructure works are usually selected through a grass-roots participatory planning process. In the planning process, women's participation is usually guaranteed by regulations on the minimum percentage of women participating in village meetings on prioritization. In the planning meetings, after group discussions, infrastructure actions proposed by women and infrastructure actions that have many female beneficiaries often receive priority in the selection process. Therefore, such infrastructure actions are pretty highly gender-sensitive and gender-responsive.

[19] According to the Report of MARD on the review of 10 years implementing the NTP NRD, the central budget accounted for 3%, the direct counterpart fund of the locality: 11.4%, the integrated budget from other programs: 11.4%, credit loan: 62.7%, enterprise capital: 5%, capital mobilized from local people and community: 6.5%.

[20] Hoàng Xuân Thành (2021), *ibid.*

[21] Hoàng Xuân Thành (2021), *ibid.*

In addition to the large-scale grants or concessional loan projects, many small-scale funding projects are implemented in specific localities by local and international NGOs (such as CVN, Plan International, RIC...). These projects often use a community-based or internal resources-based approach to community development. Due to limited funding, the infrastructure works in these projects are mainly small, micro and simple, to meet the urgent needs of the local community and are prioritized by the local people. Similar to projects funded by international development banks, small-scale projects funded by NGOs often have criteria for prioritizing investments that benefit women. In addition, the village community is handed over with the whole fund in a lump sum package, receives capacity building training, and organises construction by themselves according to a specific mechanism. With such an approach, these projects could often promote the initiative and internal resources of the community. They could save at least 30% of construction costs compared to hiring a construction contractor, while the quality is guaranteed. Women's participation and benefits are more substantively guaranteed where the works are assigned to the communities for their management (see reports of CVN, CEMA, 2018; DWC, BfDW, 2021)[22].

Through a desk review on gender responsiveness of infrastructure actions at commune and village levels funded by different sources, it could be seen that when gender responsiveness criteria are introduced as part of the requirements for infrastructure investment, and when the community is more actively involved in the consultation process or directly in the implementation of infrastructure actions, the infrastructure actions are highly gender-responsive. In the Government's public investment programs, when gender issues have not been identified as an important topic with clear criteria, the infrastructure investment would only be "gender-neutral" i.e., "not having a negative gender impact".

3.2.2 Characteristics of infrastructure in surveyed communes

In the surveyed communes in 2016-2020, many infrastructure actions were mostly invested by the NTPs' funding sources. Some characteristics of such infrastructure and the questionnaire survey results in phase 1 of the research (see Section 2.3.1) are summarized below.

Regarding capital sources, in the surveyed communes, there were 4 sources: NTPs in the period 2016-2020; the central budget other than the NTPs; local budget and socialization source; and projects funded by international organisations. The survey results show that out of 266 infrastructure actions in the surveyed communes, those funded by the NTPs account for nearly 74% of all infrastructure work; those funded by the central budget other than the NTPs account for 11%. Thus, infrastructure actions funded by central sources account for 85% of all actions at commune and village levels. This shows a large dependence on the central budget of areas having difficult socio-economic conditions like the surveyed areas. Local budgets could contribute nearly 13% of the cost of the infrastructure actions at commune and village levels. Notably, international organisations' funding was very little, only accounting for nearly 1%. The insignificant proportion of work funded by international organisations also reflects the overall picture of development aid to Vietnam, which has declined rapidly after Vietnam became a middle-income country. It is pity for this research because if there were more infrastructure works built by funded projects, then the analysis of gender responsiveness and the impacts of the infrastructure on the UCW burden would be done by comparing this group of infrastructure with the NTPs-funded infrastructure. But since the number of observations accounted for only 1% as mentioned above, the comparative analysis on the gender responsiveness and impacts of the infrastructure work on UCW time of different work in projects funded by international organisations and the national budget was not feasible

[22] CVN, CEMA (2018), Mid-term review on decentralization and empowerment in P135: Key findings and recommendations (Đánh giá độc lập giữa kỳ Phân cấp và trao quyền trong Chương trình 135 - Phát hiện chính và Khuyến nghị; DWC, BfdW (2021)), Final Evaluation Report of Project "Community Management in the New Rural Development Program" (Báo cáo đánh giá cuối kỳ Dự án "Quản lý cộng đồng trong Chương trình Xây dựng Nông thôn Mới" (2018 – 2021))

Table 5. Size of investment capital resources for infrastructure work at commune and village levels

Items	Description	Quantity	Rate %
Divided by funding sources	Total work	266	100
	NTP-NRD, NTP-SPR	196	74
	Other programs from the State budget	29	11
	Local budget and socialization	34	13
	Funding from international organisations	3	1
	Unidentified sources	4	1
Divided by the number of construction work	Trung Thanh	38	14.3
	Cao Son	33	12.4
	Ban Bo	30	11.3
	Then Sin	33	12.4
	Yen Thanh	28	10.5
	Tan Bac	104	39.1
Divided by investment owners	Communal level	212	79.7
	Provincial/district levels	54	20.3
Divided by types of work	Transportation (roads, bridge, spillway ...)	172	64.7
	Irrigation work	22	8.3
	Public work (community house, market, school, health clinic, etc.)	43	16.2
	Domestic water, electricity work	29	10.9
Divided by types of investments	Upgradation	194	72.9
	Newly construction	72	27.1

Source: Survey on infrastructure and UCW time in November 2021

Regarding the number of infrastructure work, each surveyed commune has about 30 infrastructure work built in the period 2016-2020 (Yen Thanh commune: 28 work, Cao Son commune: 33 work, Trung Thanh commune: 38 work, Ban Bo commune: 30 works, and Then Sin commune 33 work). Particularly, Tan Bac commune (Ha Giang) has an outstandingly high number of infrastructure works i.e., 104 works, because this was the province's pilot commune to fulfil all objectives of New Rural Development by 2020, therefore it received lots of investment resources from both the NTPs and other Central and local sources (e.g., from Decision No. 2086/2016/QD/TTg on supporting socio-economic development for ethnic groups having a very small population,[23] from the district budget, or non-business resources for education, health, etc.).

[23] Decision No. 2086/2016/QD-TTg dated 31/10/2016 approving the Scheme for supporting socioeconomic development of ethnic groups having very small population in 2016-2025.

Regarding the types of works, in the period 2016-2020, the surveyed communes mostly received investment in transportation (64.7%); followed by domestic water and electricity facilities, (10.9%), irrigation (8.3%) and other public infrastructure such as community houses, markets, schools, health stations, etc. (16.2%). Most of the actions in the poor district of Da Bac (Hoa Binh), thanks to extra funds from Program 30a to invest in inter-commune infrastructure, are major transportation infrastructures. Tan Bac, Yen Thanh communes (Ha Giang) received further funding support as per the Decision No. 2086/2016/QD-TTg to construct domestic water supply work; or district budget to support the repair of irrigation canals, schools, health stations, headquarters of the Commune People's Committee (CPC); or non-business funding sources for education, healthcare, economy, transportation and irrigation to repair and renovate schools, classrooms, health stations, the headquarters of the commune's civil committee, to construct roads, or to repair irrigation ditches. Ban Bo, Then Sin communes (Lai Chau) received capital resources from the province's increased budget revenue and government bonds to mostly invest in roads and one-door houses (nhà một cửa). Cao Son commune (Hoa Binh) received an additional funding source from the Irish Government for Program 135 (about 1-2 projects/commune).

Regarding the size of capital resources, according to Table 6, the average cost of new construction or upgrade of infrastructure in 6 communes was about VND806 million per infrastructure. Of which, Cao Son (Hoa Binh) and Ban Bo (Lai Chau) communes had the highest average funds per infrastructure (more than VND1.8 billion and VND1.6 billion/infrastructure respectively) since there were many key construction works and inter-commune works of which the districts were the investment owners and Program 30a and government bonds funded them. In contrast, Trung Thanh (Hoa Binh) and Tan Bac (Ha Giang) communes had smaller sizes of capital resources (VND342 million and VND387 million per infrastructure, respectively). According to the results of the FGDs of the commune officers, the capital resources of a maximum of VND500 million per infrastructure mainly came from the NTPs. Cao Son commune in the poor district of Da Bac (Hoa Binh) received additional funding from Program 30a with a large size of the capital resource (up to VND10-30 billion/infrastructure). Then Sin commune (Lai Chau) with increased province budget revenue also invested in two very large infrastructure works (VND25-30 billion/infrastructure).

Table 6. Size of investment capital resources for infrastructure at commune and village levels (VND1 million)

Surveyed commune	Medium	Smallest	Biggest
Trung Thanh	342	8	7,200
Cao Son	1,834	175	29,750
Ban Bo	1,642	8	17,000
Then Sin	728	25	5,018
Yen Thanh	958	25	2,573
Tan Bac	387	20	6,231
Average	**806**	**8**	**11,295**

Source: Survey on infrastructure and UCW time in November 2021

Classification by the nature of work (new construction or renovation, up-gradation): In the surveyed communes, 72.9% of infrastructures were newly constructed; the balance of 27.1% were upgraded/renovated/repaired. New construction infrastructure actions were usually transportation, domestic water facilities, and canal/ditches. The upgraded/renovated/repaired infrastructure actions were usually repairments of village cultural houses, schools, health stations or transportation systems. Please note that maintenance and repair (M&R) items were not included in the list of infrastructure actions covered in this research. The NTPs usually fund the M&R items in the localities, they are usually of small values (about VND30 million/infrastructure on average) and are only minor repairs.

Classification by the level of investment owners: The percentages of infrastructure whose investment owners were communes and districts were 79.7% and 20.3% respectively. FGDs with commune officers and village women show that the communes were investment owners of most of the infrastructure funded by the NTP-NRD, except for a few inter-communal infrastructures of which the districts were investment owners. With those funded by the NTP-SPR (from Program 135), communes were investment owners of most of the infrastructure. The districts were investment owners of some infrastructure with complicated technical requirements. Districts were investment owners of most infrastructure under Program 30a in the Da Bac district (Hoa Binh). With those funded by other sources such as district budget; non-business resources for education, health care; resources from Decision No. 2086/2016/QD-TTg, then mostly the districts were investment owners. Although the percentage of infrastructure where communes served as investment owners accounted for nearly 80% of all infrastructure work in the period 2016-2020, it should be noted that the execution of the right of "substantive" investment owners remained not high. In theory, there were many infrastructures where the Commune People's Committee were investment owners, but the district level actually directed the investment procedures and decision-making process.

Community participation in infrastructure actions: the overall review of infrastructure actions funded by the NTPs (Section 3.2.1 above) and the survey results on infrastructure actions in the communes show a similar picture. NRD infrastructure works have received great public contributions, including from labour to in-kind contributions. Since it was required to mobilize the contribution of local people during the construction, the extent of participation of the people and the community in the infrastructure was high. Meanwhile, actions funded by the NTP-SPR mostly provided almost 100% of support, and communes often hired contractors to implement. The community's participation in the investment process of these infrastructure works remained limited (except for simple tasks in some construction activities).

3.3 Gender responsiveness of infrastructure work

3.3.1 Gender responsiveness of infrastructure work

This section analyses the gender responsiveness of infrastructures. Gender responsiveness was assessed based on 10 criteria on the participation, voice, and level of benefits of women in investing and using infrastructure as shown in Table 7 below. These criteria were assessed on a scoring range of 0-10 with 10 representing the highest gender responsiveness of that criterion. These criteria were assessed through the lens of commune officers (using the Checklist) and women in the surveyed villages (using the household questionnaire). The maximum score of 10 criteria is 100 (60 points for the construction process; 40 points for the post-construction process). Thus, the extent of gender responsiveness was measured on a scale from 0 to 100, in which 100 was the infrastructure being most gender-responsive. For further details of the scoring scale of each criterion, please refer to Annexe 5 of this report.

Table 7. Assessment criteria on gender responsiveness of infrastructure work

Construction process
1. Were there village meetings organised to propose priorities for infrastructure construction?
2. If there were village meetings, how were women's opinions/ comments in the village meeting(s)?
3. Were women's prioritized needs considered when selecting the infrastructure?
4. Does the infrastructure design meet women's priority needs?
5. Did women participate in the construction work process?
6. Did women participate in the (construction) monitoring and acceptance of the infrastructure?
After construction
7. Is the infrastructure still in use now?
8. The level of use and benefit of the infrastructure by women and men?
9. Does the infrastructure help women reduce time for housework?
10. Does the infrastructure help women increase their opportunities of getting a job (do local jobs, migrate to work)?

At the most general level, the gender responsiveness of infrastructure work in the surveyed communes, according to public opinions, is below the low level. According to the household survey results, the total score of gender responsiveness of infrastructure work is only 34.4/100 points (see Table 7). Thus, if 100 is considered the highest score of gender-responsive infrastructure work, in reality, commune and village-level infrastructure in the surveyed area only met 34.4%, which is about 1/3 of the requirements. Notably, there is a big difference in the perception of women respondents in household interviews and the assessment of commune officers on the gender responsiveness extent of infrastructure work. While the average score perceived by women in the commune was 34.4, the commune officers assessed it at 55.7. From the viewpoint of the research team, since the commune officers are those having directly monitored these works, there was a biased tendency to give better assessment results on all criteria.

Moreover, the opinion of commune officers was based on a very small number of observations, so their statistical reliability was not high. The research team believes that women respondents' perception in the household survey would be more accurate. It was the actual feeling of how they were involved in different stages of the infrastructure investment process. In addition, the summary results from the household survey were also based on a sample size with a larger number of observations, making its statistical confidence level also higher. Therefore, the major analyses were based on public perception and feelings in this section. And evaluations of commune officers were used for reference only.

Table 8. The average score on gender responsiveness of infrastructure work

Surveyed commune	About the construction process		About use/benefit from the work		The total score of the whole work	
	Villagers	Commune officers	Villagers	Commune officers	Villagers	Commune officers
Trung Thanh	11.5	40.7	9.9	25.3	21.4	66.0
Cao Son	23.8	19.5	19.8	27.4	43.5	46.9
Ban Bo	14.6	29.5	15.2	25.1	29.7	54.6
Then Sin	25.7	29.3	22.8	28.1	48.5	57.3
Yen Thanh	15.8	24.7	18.1	23.8	33.8	48.5
Tan Bac	13.3	28.1	13.6	28.3	27.0	56.4
Average	**17.7**	**28.8**	**16.7**	**26.9**	**34.3**	**55.7**

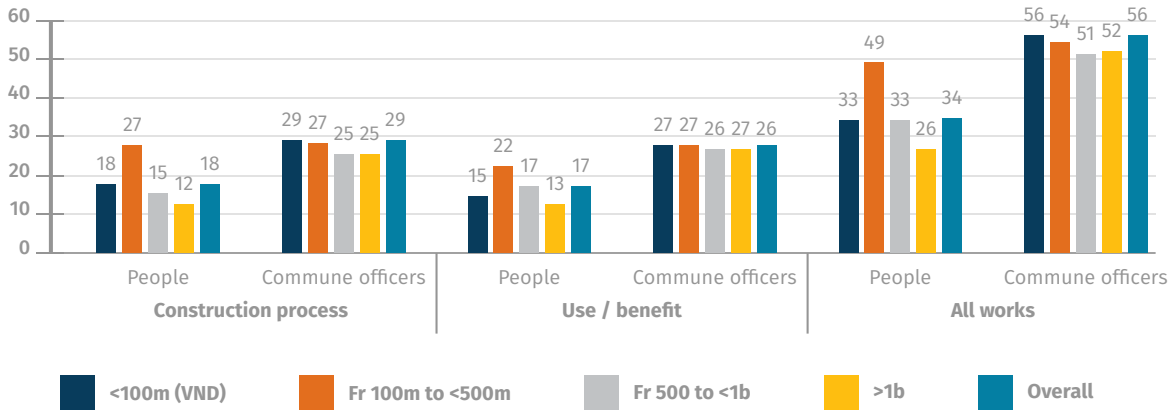
Source: Survey on infrastructure and UCW time in November 2021

Results in Table 8 show a big difference in gender responsiveness of infrastructure work. Accordingly, Then Sin (Lai Chau), Cao Son (Hoa Binh) communes have the highest total scores and Trung Thanh (Hoa Binh), Tan Bac (Ha Giang) had the lowest ones. Then Sin commune is the only commune out of 6 surveyed communes. Both commune officers and local villagers rated that women's participation in and benefit from the infrastructure actions was high. The explanation for the high percentage of women participating in infrastructure in Then Sin commune (Lai Chau) is that many men migrated to work as hired labourers, therefore local tasks were mainly performed by women, including the participation in the infrastructure-related tasks. According to commune officers and women in the FGDs, the percentage of women attending village meetings to select the work was quite high (70-80%). Women participating in FGDs also said that they were the main labourers in tea harvesting and production, so they had a pretty equal voice to men in the family and society. In addition, the infrastructure in Then Sin was highly gender-responsive because most of the infrastructure construction was done with the participation of the community. In 2016-2020, the commune conducted 20/33 infrastructure actions under specific mechanisms such as Decree No. 161/2016/ND-CP. In Cao Son commune, village-level infrastructure was also implemented in compliance with specific mechanisms such as Decree No. 161/2016/ND-CP which was assigned to the community to self-implement. This was partly because the capacity of community groups in the commune has been strengthened through several NGO-funded projects. Therefore, the infrastructure in Cao Son commune was highly gender-responsive. Thus, the two communes of Then Sin (Lai Chau) and Cao Son (Hoa Binh) both had high total scores of gender-responsiveness of infrastructure works because many men in these two communes migrated to work as hired labourers, and women actively participated in all stages of the investment process (especially in the planning meetings and the construction of the work); specific mechanisms such as Decree No. 161/2016/ND-CP have been applied to small-scale projects where communities were assigned to self-implement.

Regarding gender responsiveness by the size of the infrastructure, it seems that the smaller the infrastructure is, the more gender-responsive it is. Figure 2 shows that the commune officers' assessment results in phase 1 and public assessment results in phase 2 are pretty similar, the higher the total score of the infrastructure's gender responsiveness is, the smaller the size of capital resources is (less than VND500 million). This result is also similar to the feedback from women's FGDs: work with small capital resources i.e., less than VND500 million (usually NTP-NRD) had the highest total score on women's participation. The reason is that small

and simple work was usually narrowly implemented in a village, so the community had a greater say in the selection and design. These were also often simple construction work, therefore they often mobilized/ used more local labourers. If a specific investment mechanism is applied for self-implementation by community-based groups, this is a group of infrastructure with high potential for applying the specific mechanism. Meanwhile, larger-scale infrastructure was usually constructed by contractors. And in these cases, contractors rarely used local labourers, or if they hired local people, they usually only hired men due to the biased perception that "men are stronger, have better techniques", and "Women are weak", "Women have fewer construction techniques than men" – these are common comments on women mentioned by the women participating in FGDs.

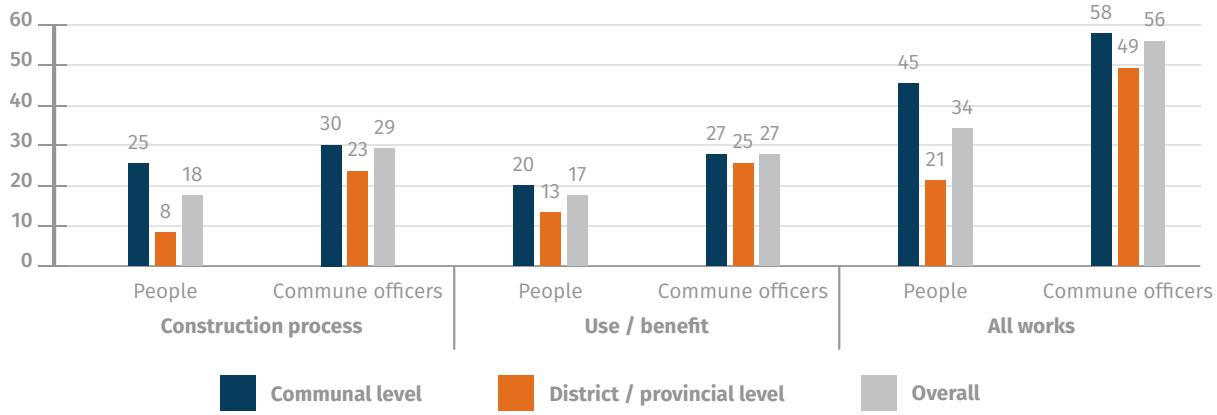
Figure 2. Gender responsiveness of infrastructure work by the size of capital resources



Source: Survey on infrastructure and UCW time in November 2021

The survey results also show that projects whose investment owners were communes are more gender-responsive. Figure 3 indicates that both commune officers and villagers considered that the average total scores of the infrastructure's gender-responsiveness were higher when the investment owner was at the communes/commune level, especially in the stages related to the construction process. This is similar to the results of FGDs with women and commune officers i.e., the infrastructure whose investment owners were communes usually had higher women's participation than other work. Infrastructure actions where communes were investment owners often mobilized more community engagement and contribution in cash, labour, and land during the implementation than those where the districts were investment owners. Unfortunately, there was no way to identify, among the infrastructure whose investment owners were communes, when the communes served as the "actual/substantive" investment owners, and when the communes served as investment owners "on paper" only – although the results of FGDs with commune officers show pretty obvious that the key point was not about whether the CPCs were investment owners or not. Still, instead it was about the "substantiveness" level of the execution of the right of the investment owners. If such two groups could be distinguished, infrastructure actions where the commune level acted substantively as investment owners were more gender-responsive.

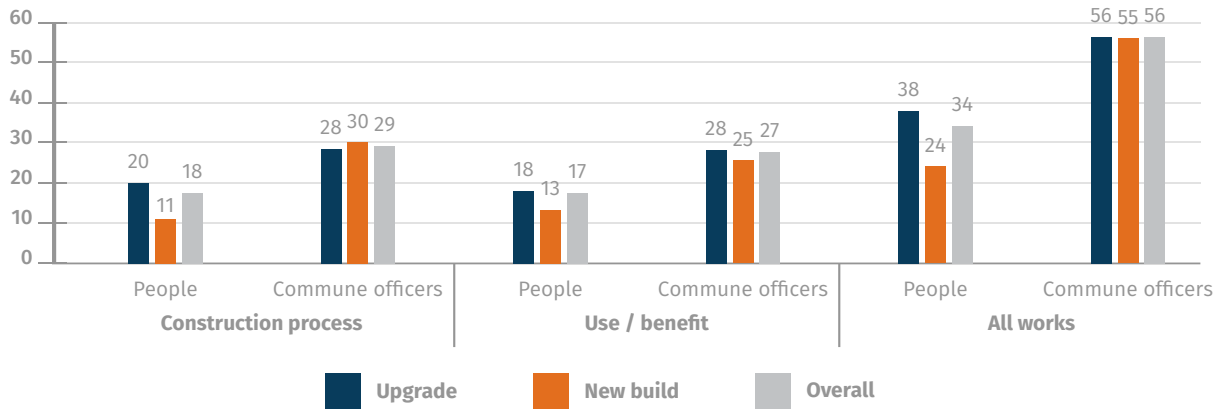
Figure 3. The extent of gender responsiveness of infrastructure work by the level of investment owners



Source: Survey on infrastructure and UCW time in November 2021

The correlation between gender responsiveness and the types of investment, i.e., new construction or upgrade (repair, renovation), is unclear, with differences among the information sources. According to Figure 4, commune officers' total assessment scores for upgrades or new construction were not different. However, the household survey results show that the upgraded group was more gender-responsive (had a higher level of gender responsiveness) than the new construction. This result is also slightly contrary to the trend of women comments in the FGDs that women participated and benefitted more in newly built infrastructure. The newly built infrastructure required more labour than upgraded infrastructure (roads, cultural houses, schools, health stations). Furthermore, the change in the extent to which women benefitted from an upgraded infrastructure was not as obvious as from a newly built one because before and after the upgrade, local people (including women) have still benefitted despite that the infrastructure was degraded before up-gradation.

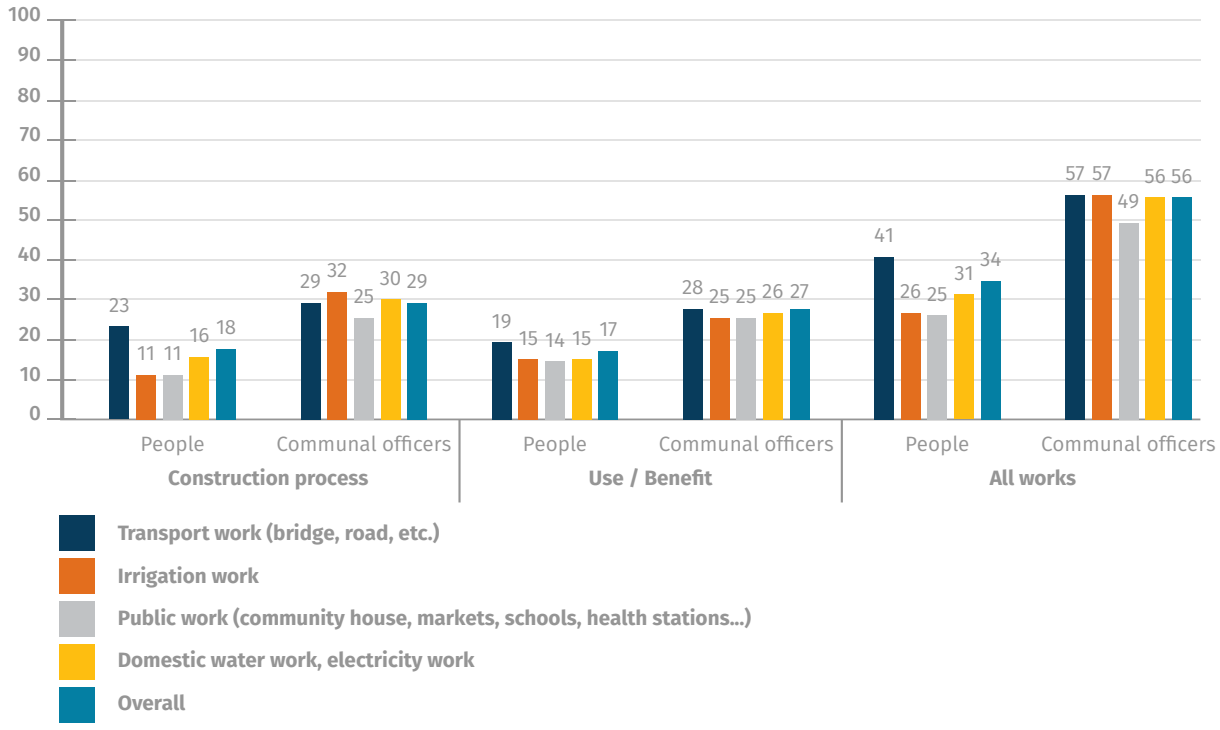
Figure 4. Gender responsiveness of newly built and upgraded infrastructure



Source: Survey on infrastructure and UCW time in November 2021

By the types of work, the level of gender responsiveness of rural transportation infrastructure was perceived to be the highest. In Figure 5, the average score of gender responsiveness of transportation infrastructure as assessed by local people was 41.4/100, the highest score among all types of infrastructure (including transportation, essential infrastructure, and other public infrastructure). Notably, infrastructure such as schools, health stations, etc. was least gender-responsive. This result is also consistent with women's comments in the FGDs that the transportation infrastructure/roads under NTP-NRD were more gender-responsive than other types of infrastructure. The main reason is that women participated more in the "construction process" because the popular mechanism of rural road construction of the NTP-NRD was: "the State and local people work together", which could mobilize labour contribution from the wider population.

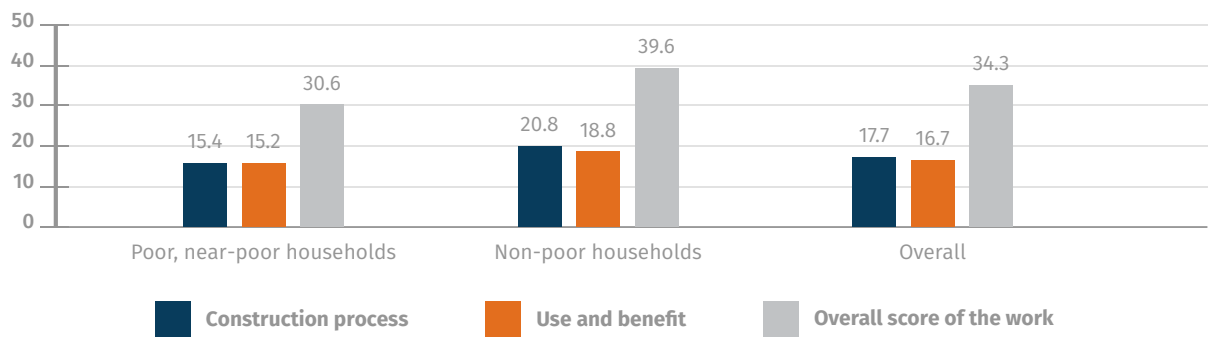
Figure 5. Level of gender responsiveness by types of infrastructure



Source: Survey on infrastructure and UCW time in November 2021

The average total scores of gender-responsiveness assessed by women in poor and near-poor households are slightly lower than scores by women in non-poor households (poor and near-poor: 30.6 points while non-poor: 39.6 points – as shown in Figure 6). The disparity is more evident in the early stages of the construction process (i.e., before infrastructure completion). According to information from the FGDs, women in poor and near-poor households rarely attended meetings to plan the proposed work because they were busy, hesitated to join meetings held in the evening, etc.; or they did participate hesitated to speak up. Women of poor and near-poor households were also less involved in the monitoring and accepting work than those in non-poor households. At the stage "after the completion of infrastructure", there is no difference in the impacts of the infrastructure on the level of use and the reduction in housework time of women in poor, near-poor and non-poor households. Therefore, the total gender responsiveness score for the infrastructure assessed by women in poor and near-poor households was lower than that in non-poor households.

Figure 6. Gender responsiveness of infrastructure assessed by households



Source: Survey on infrastructure and UCW time in November 2021

3.3.2 Some factors affecting the gender responsiveness of infrastructure work

Survey results on gender responsiveness of infrastructure shown in Table 7 do not show any significant difference between the average scores of the two stages: construction, and operation and use. The results of FGDs with commune officers and villagers also do not indicate any difference. The research team believe that this is also an appropriate result. Because if the gender responsiveness of infrastructure during construction (including prioritization, design, construction, and supervision) is high, then the gender responsiveness of such work is also high during the operation and use. The FGD results also provide further insights into the factors affecting women's participation in these stages. However, criterion 1 and 7 received quite high average scores (5-7 points/criteria). Criterion 6 gained the lowest average score (0.07 points). Criteria 2, 5, and 10 also had very low average scores (over 2 points). Other criteria such as 3, 4, 8, and 9 all had scores below the floor score (3-5 points). Among different types of infrastructure, roads and small-scale capital investment infrastructure (VND100-500 million) had a higher average score of gender responsiveness than most of the rest criteria (see Table 9 below). Regarding the level of gender responsiveness in the "construction" phase, the results in Table 9, combined with information from the FGDs, show several factors affecting women's participation by groups of issues as follows:

At the stage of organizing the planning meetings (planning): 4.78 and 4.53 are the average scores of two criteria related to the planning stage (criterion 1: organizing village meetings to propose the infrastructure; and criterion 3: selecting infrastructure with consideration to women's priorities/proposals). However, the quality of women's participation in village meetings (criterion 2: women's opinions in village meetings) remains low (2.31 points on averagely). If the meetings involve many women (usually in areas where men are busy working as hired labourers or migrating to work far away) and women actively raise their opinions, the infrastructure is likely to be more gender-responsive. Women who attend village meetings often voice their opinions in the villages near the commune centres with a large population of Kinh, Tay, Nung, Muong and Thai ethnic groups. But in villages far from the commune centres with a large population being Dao, Mong, Pa Then and Lao, women often speak less at village meetings to select infrastructure action.

At the stage of designing the infrastructure: the average score of criterion 4 on the design of gender-responsive work is low (3.1 points) with most responses ticking the option: the infrastructure did not meet either men's or women's needs (0), or the infrastructure equally met both men and women's needs (6 points). Very few respondents chose the option: the design met women's priority needs (10 points). The opinions of commune officers and women in the FGDs also show that, at present, whether done by the community/local people or by contractors, the design of the work shall follow the characteristics and technical requirements of the Government, whether the design of its ancillary parts meets women's priorities or not.

At the construction stage: the average score of criterion 5 about women's participation in the construction process is generally low (2.88 points). This is consistent with the information from the FGDs of officers and villagers in all surveyed areas i.e., women were less likely to participate in construction work. In Lai Chau, the two surveyed communes met the criteria for new rural development since 2015, so the NTP-NRD funding resources after 2015 have been very little, mainly from increased budget revenue of the province/district, and the districts were mainly the investors, therefore women had very few opportunities to participate in the work. Meanwhile, Ha Giang and Hoa Binh received a pretty large investment from the NTP-NRD of which the investment owners were communes, which were implemented under a specific mechanism, therefore, women participated more (especially in road construction). Notably, in Ha Giang, Pa Then women were the main participants because men, according to FGD results, often drank alcohol and only worked in. According to commune officers and villagers, amongmorning. Among the types of infrastructure in the six srs and villagers, women were most often involved in road construction, less often in small irrigation canals, domestic water facilities, and repairing villagee to technical limits. Projects done by the community also involved more women in construction than projects done by contractors because contractors often used male workers from elsewhere or hired some local male workers. Very few women participated, and if any, they only participated as construction assistants or cooks.

At the construction supervision stage: women hardly participated in the supervision process and acceptance of infrastructure work (the average score of criterion 6 is the lowest - only 0.07 points). There were usually only commune-level supervisory boards; few places had village/community supervisory boards, and the percentage of female participants in these supervisory boards was low (usually only about 30%). According to commune officers who participated in FGDs, if women participated, it was just to include enough diverse participants, and in reality, they did not join much supervision work. According to commune officers, the main reason is that women's technical knowledge was poorer than that of men, so they were less involved in such boards. Not to mention that the village community supervision boards operated in a perfunctory manner, especially in infrastructure constructed by contractors.

Table 9: Gender responsiveness level of work, by criterion

	1. Were there village meetings organised to propose priorities for infrastructure construction?	2. If there were village meetings, how were women's opinions/ comments in the village meeting(s)?	3. Were women's prioritized needs considered when selecting the infrastructure?	4. Does the infrastructure design meet women's priority needs?	5. Did women participate in the construction work process?	6. Did women participate in the monitoring and acceptance of the infrastructure?	7. Is the infrastructure still in use now?	8. The level of use and benefit of the infrastructure by women and men?	9. Does the infrastructure help women reduce time for housework?	10. Does the infrastructure help women increase their opportunities of getting a job (do local jobs, migrate to work)?
By type of work										
Transportation (road, bridge, etc.)	6.27	3.08	5.54	3.63	4.24	0.09	7.43	4.48	3.69	2.96
Irrigation	3.40	1.57	3.02	2.38	0.57	0.19	7.55	3.74	1.98	1.81
Public service facilities (community houses, markets, etc.)	2.65	1.30	2.91	2.23	1.61	0.04	6.25	3.33	2.97	1.85
Domestic water, electricity facilities	4.63	1.99	5.10	3.48	0.93	0.04	5.92	3.82	3.31	2.12
By funding size										
Under VND 100 million	5.04	2.47	4.52	3.29	2.58	0.07	6.24	3.82	3.16	2.03
VND100 - <500 million	7.23	3.76	6.24	4.28	5.34	0.11	9.07	5.47	4.29	3.14
VND500 million - <1 billion	3.98	1.87	4.20	2.83	2.44	0.05	7.69	3.94	3.29	2.56
Over VND 1 billion	3.35	1.47	3.51	2.34	1.60	0.05	5.27	3.10	2.85	2.16
Overall	4.78	2.31	4.53	3.10	2.88	0.07	6.86	3.99	3.36	2.46

Source: Survey on infrastructure and UCW time in November 2021

The process of maintenance and repair: 6.86 points for criterion 7 (i.e., the work still in use) is the highest average score of all, this is easily understandable as the infrastructure works have been invested in 2016 or later so basically, they are still being well operated. The maintenance and repair are mainly carried out by women, especially on roads (clearing tall trees, planting flowers, embanking roadsides to prevent erosion) or ditches (dredging in some places). According to commune officers in the FGDs, with the tasks that require the participation of many people and are not paid, (and therefore) women engage more than men. When the infrastructure is degraded or suffers minor damages, people can contribute on their own to repair. For major damages, the commune shall make a plan, and use State resources to maintain and repair the infrastructure. Typically, in Lai Chau, funds are provided annually to maintain and repair the channels/ditches from the provincial non-business resources for irrigation to the communes (more than VND100 million per commune), so the communes set up maintenance and repair teams to protect the infrastructure. Or in Hoa Binh, RIC supports community-based maintenance groups to perform maintenance and repair for the small infrastructure under VND30 million.

Level of use and benefit from the infrastructure after completion: Average score of criterion 8 on the women's use and benefit from the infrastructure after construction compared to that of men is 3.99 points; meaning that the extent of use and benefits from the work of women is not higher than that of men. However, the results of some FGDs show more positive signs about the extent to which women use and benefit from infrastructure work. Through discussions, many commune officers and women admmain users and beneficiaries with some infr with some infrastructureastructure. For example, the completion of production/in-field roads has helped reduce the production work time of women such as rice farming, maize farming, tea leave picking, firewood collection, etc. since they are the main labourers in agricultural activities of the families. Irrigation canals have helped women reduce time spent on agricultural water. The village's main roads have helped women reduce the time to take their children to/from school and time to go to the market. The domestic water work has helped them save time fetching water, resulting in convenience in cooking, bathing their children, or washing clothes.

Impacts of infrastructure on reducing women's time on care work: The average score of criterion 9 'infrastructure resulting in women's UCW time reduction' is 3.36, with all types of infrastructure. The FGDs with women show that some main village roads have helped reduce women's time taking children to/from school and going to the market. In the past, in some places, due to bad road conditions and rains, women had to walk and carried their children on their backs to school. Even women living far away from schools had to take their children to school and waited for their children to finish school, then picked them up home, affecting their work in the fields. Since the roads' completion, many women could ride motorbikes, shortening their time taking their children to/from school and going to the market. Production/in-field roads have helped reduce women's time to collect firewood. In the past, women had to collect firewood, carried it on their backs, and walked home, which was time-consuming and took a lot of their effort. Since the roads' completion, women have transported firewood by motorbikes, which reduced women's time and efforts on this task. Domestic water facilities were also considered to have saved women's housework time. Before the construction of such work, women were often the ones to carry out such tasks as carrying/fetching water, repairing the family's self-made bamboo water pipes when the pipes were obstructed by garbage when it rained, or in the dry season when there was not enough water, sometimes they had to carry water home from rivers and streams. Since the infrastructure's completion, there has been enough water to use, and some households with good income bought washing machines to use.

Impacts of infrastructure on women's job opportunities: This criterion 10 received 2.46 points, a very low one. This result shows that according to women's self-assessment, infrastrusignificantly impactedantly impacted job opportunities and income generation for women. The results of FGDs with local officers and

people show that there are not many paid job opportunities in the surveyed communes. If they want to have a paid job, they must migrate to work far away or work at factories in the district centre or neighbouring districts. Due to the UCW burden, women are less likely to participate than men in jobs requiring traveling out of the village. With few local job opportunities, the impacts of small-scale infrastructure work in communes and villages on job opportunities for women are low.

3.4 Infrastructure and women's work time allocation

This important section of the report analyses the results of the impacts of infrastructure on women's UCW burden. Please note that the UCW in this section only includes regular and continuous work/tasks. Some UCWs do not happen frequently (for example, attending Women's Union meetings once a month, going to the Commune People's Committee for public administration issues 3-4 times a year, health check-ups when being sick, etc.). However, the time spent on this work only accounts for a very small proportion of the UCW burden. Therefore, even if the infrastructure has impacts that change the time spent on these irregular UCW, they will have an insignificant impact on the UCW burden of women in general. Please also note that in this research, the research team only collected information from the women who were mainly in charge of the UCW in the households. Ideally, during the survey, UCW was listed out and then enumerators ask about the contribution of household members to each UCW. This approach would allow detailed information on the sharing of UCW burden among household members. In that way, the information obtained will be useful to analyse the impacts of infrastructure on the redistribution of the UCW burden at the household level. However, this approach would make the survey very complicated, and require all household members who do UCW to be present to take a turn in answering the questions. The interview time would be much longer (compared to the current average time of 2 hours). Therefore, the above approach would be unfeasible for this research.

3.4.1 Measurement results of women's time use

The survey results show a full picture of the women's time allocation in the surveyed areas. Please note that the results of time measurement are relative rather than absolute. As analysed in Section 2.3.3, to accurately measure time allocation, it is necessary to do a survey using the "time log/diary" ("nhật ký thời gian") method, which was not feasible within the framework of this research. Therefore, the survey results on time allocation presented in Table 10 below should be viewed with caution. Also please note that: the results of the time measurement in this table were calculated based on the assumption that if a household did not provide the time they spent on a particular activity, then the time for that activity was assumed to be zero (0). For example, 182 households provided answers about the time to collect firewood, the remaining 54 households in the survey sample did not respond. To calculate the average time spent collecting firewood by households in the survey sample, the time of 54 households who did not respond was taken as 0. Statistically, it means that the vacant time values ('missing') were assigned to a value of 0. This calculation method is reasonable because the enumerators had to ask all the questions (because the questionnaires on Kobotoolbox require all questions to be answered). According to that calculation method, the results of the average time allocation in the survey sample and the time allocation by poor/near-poor and non-poor households are presented in the table below.

Table 10. Average time allocation in a day by women

	Average	Poor/near-poor hhs	Non-poor hhs
Indirect UCW (minutes)			
Cooking and cleaning after cooking	86.6	80.6	95.4
Washing clothes, cleaning house	38.3	39.9	35.9
Going to market, buying stuff for daily activities	35.5	35.3	35.8
Going to fetch water for domestic use	8.2	9.7	5.9
Going to collect firewood	48.0	51.6	42.7
Taking children to/from school	11.6	11.9	11.1
Direct UCW (minutes)			
Care of children	57.6	59.6	54.3
Care of the elderly	2.6	2.8	2.2
Care of persons incapable of work	4.1	3.5	4.8
Total time spent on UCW	**292**	**295**	**288**
Paid work (minutes)			
Paid work	38.4	37.0	40.4
Self-employment in agriculture	321.9	322.8	320.7
Self-employment in non-agriculture	37.8	31.5	47.1
Average time spent on paid work (minutes)	**398**	**391**	**408**

Source: Survey on infrastructure and UCW time in November 2021

The survey results show that women's total time spent on UCW in a day is nearly 292 minutes, i.e., 4.9 hours/day. In which, the UCW such as going to the market, fetching water, collecting firewood, taking children to/from school, cooking, cleaning, and washing takes up 228 minutes (i.e., 3.8 hours), the direct UCW such as taking care of young children, the elderly, persons incapable of work takes up 64 minutes (equivalent to 1.1 hours). Thus, the women responsible for the UCW in the surveyed area must spend more than 20% of their daily time (24 hours) on UCW. The results of a survey by ActionAid Vietnam, MOLISA, and AFV (2017) provide an average number of 4.06 hours/day as the time spent on UCW by women in various regions including big cities (such as Hanoi and Ho Chi Minh City), and provinces with difficult economic conditions (such as Ha Giang, Cao Bang), and economically developed provinces (such as Lam Dong and Quang Ninh). In this research, the survey subjects are women in communes with extremely difficult socio-economic conditions and areas with a large percentage of ethnic minorities. Therefore, it is predictable for the estimated UCW time of women in this research to be higher than that of the study by ActionAid Vietnam, MOLISA, and AFV (2017).[24] UCW time of women in surveyed areas is higher than their paid work time. The last part of Table 10 shows that women spend on paid work averagely 398

[24] The Government's Report No. 362/BC-CP dated 10 August 2020 on the implementation of the national objective on gender equality in 2019 and in the period 2011-2020 quoted the results of an independent survey by ISDS which indicated that on average, women still had to spend 4.5 hours/day on unpaid care work. However, this ISDS report has not been published, so its sampling site is unknown, it is not possible to compare with the results presented in this research.

minutes/day (equivalent to 6.6 hours). Thus, women's time on paid work in a day is 1.8 hours higher than their UCW time. The total "active work time" including UCW and paid work of women is on average 11.5 hours/day. Thus, a woman mainly responsible for UCW in the surveyed area has 12.5 hours/day left for herself, including time to sleep, rest, self-care, etc.

The results in Table 10 also show no significant difference between women's time allocation in poor/near-poor households and non-poor households. The total UCW time of women in poor/near-poor households is only 7 minutes longer than women in non-poor households (7 minutes, equivalent to 2.5% of the total UCW time of women in non-poor households). In terms of paid work, the total time of women in the poor/near-poor households on paid work is 391 minutes, 17 minutes less than that of women in the non-poor households (equivalent to about 4.2% of paid work time of women in non-poor households). The insignificant difference in time allocation of women in poor/near-poor and non-poor households would result from the circumstances of the surveyed communes which all are poor communes with difficult socio-economic conditions. Therefore, the difference in living standards of the poor, near-poor households and non-poor households in the survey sample significantly affectr households.

3.4.2 Impacts of infrastructure on women's work time

This section of the report analyses the survey results on the impacts of infrastructure on women's time allocation. To ensure accuracy in measuring the changes in the UCW time, the analysis in this section only considered actual observations on certain tasks conducted. In this research, the UCW tasks were divided according to the Analytical Framework presented in Section 2.2. Accordingly, women's "active time" was divided into 4 main categories, including (i) UCW related to travelling; (ii) UCW related to cooking, cleaning, clothes washing; (iii) Direct UCW (taking care of children, the elderly and the sick); and (iv) paid work. Survey results on the relationship between infrastructure and these works are presented below.

Impacts of infrastructure on UCW involving travelling

Indirect UCW involving travelling include going to the market, fetching water, collecting firewood, and taking children to/from school. Since not all activities are daily, the questions about frequency were asked along with the questions about time (duration) and means of transport. The results were converted into average time during analysis, i.e., minutes/day. Many means of transportation were used for the same travelling-related UCW, the average time by all means of transportation was included in the average work time of such UCW, in minutes/day. For each UCW group, the research team made questions about different infrastructure groups.

Regarding the time spent on going to the market, the infrastructure covered in the questions included roads, bridges, spillways, and market-related work; regarding the time spent on going to fetch water, the infrastructure work covered in the questions included roads, bridges, spillways, and domestic water work. Similarly, regarding the time spent on going to collect firewood, the infrastructure work likely to have impacts included transportation work; regarding the time spent on taking children to/from school, in addition to transportation work, schools, classrooms, etc. were also mentioned. The survey results are summarized in Table 11 below.

Table 11. Impacts of infrastructure on UCW: travelling activities

	Change in time spent			Other changes felt (%)	
	Current time (minutes/day)	Time reduced (minutes)	% time reduced	Safer	Easier to travel
Go to market (N=165)	35.5	5.1	14.4	12.1	9.7
Fetch water (N=45)	8.2	0.4	4.9	52.3	47.7
Collect firewood (N=182)	48.0	1.8	3.8	2.1	1.7
Take child from/to school (N=103)	11.6	5.7	49.1	76.4	94,5

Source: Survey on infrastructure and UCW time in November 2021

According to the survey, infrastructure impacts on the indirect UCW time are quite low. The most significant impacts are going to the market and taking children to/from school. With these two groups of UCW, transportation infrastructure work (roads, bridges, spillways...) plays an important role. This is also the group that accounts for a major proportion of the list of infrastructure work built in the period 2016-2020 in the surveyed communes. The results presented in Table 11 show a reduction of 14.4% (equivalent to 5.1 minutes) in time to go to the market and 49.1% (equivalent to 5.7 minutes) in time to take children to/from school. With the remaining two groups of UCW, the change in time spent after the infrastructure was put into operation is insignificant. In addition to the impacts on UCW time, surveyed women also reported their feelings when using infrastructure work e.g., safer or easier to travel. The results in Table 11 show that women highly appreciated the improved access to infrastructure which made fetching water safer (52.3%) and made it easier to travel (47.7%). Notably, taking children to/from school also received positive feedback as it was safer (76.4%) and easier to travel (94.5%) after the infrastructure works covered in the questionnaires were put into operation.

Impacts of infrastructure on time spent on cooking, cleaning, and laundry

Among the UCW groups, cooking, cleaning, and laundry are the most time-consuming. To avoid confusion among different tasks in this group, the survey questionnaire provided a detailed definition of the tasks. Cooking time includes the time for food preparation, pre-processing, processing, cooking, etc. until the meal is ready. After cooking, time for cleaning includes cleaning up after meals, washing dishes and utensils, and cleaning up the kitchen/cooking area. Time for cleaning houses and washing clothes includes time for house cleaning (excluding the cleaning after meals) and time for washing clothes, blankets, mosquito nets, etc. of the family. The survey results are summarized in Table 12.

Table 12. Impacts of infrastructure on UCW: cooking, cleaning

	Change in time spent			Other changes felt	
	Current time (minutes/day)	Time reduced (minutes)	% time reduced	Cleaner	More convenient
Cooking and cleaning after meals (N=210)	86.6	4.1	4.7	16.8	6.0
Washing clothes, cleaning house (N=210)	38.3	2.1	5.5	14.3	4.9

Source: Survey on infrastructure and UCW time in November 2021

With such a UCW time, the research team questioned the impacts of domestic water and electricity facilities – these are two types of infrastructure that are likely to directly impact this UCW group. The results in Table 12 show that these infrastructures have slightly reduced the UCW time after being put into operation. On average, the total amount of reduced time on this UCW group is just 6.2 minutes/day, equivalent to 5%, which is very little. The surveyed infrastructure works have not brought about any significant changes to improve the "quality" of these UCW tasks. The survey results show a low percentage of women who felt that cooking, cleaning and laundry tasks became cleaner and more convenient. In fact, there were not many newly built domestic water facilities in the surveyed villages during the 2016-2020 period. There are nine domestic waterworks implemented in the surveyed area, but six are upgrades to existing infrastructure. The reason for not many domestic water facilities being newly built is that domestic water facilities belong to the group of essential infrastructure that was invested a lot in the previous period. During the 2016-2020 period, many maintenance and repair activities applied to domestic water facilities in the surveyed communes. However, this research did not consider the impacts of maintenance and repair activities.[25]

Impacts of infrastructure on time to care for children, the elderly, and sick people

The UCW in this research was divided into three main groups of work: taking care of children, taking care of the elderly who are no longer able to work, and taking care of other people who need care (sick people, people with disabilities who cannot work). The survey covered the infrastructure groups, including domestic water, electricity, community houses, schools of all kinds, and health stations. The survey results are summarized in Table 13. Please note that in the survey sample, the households with elderly people who are no longer able to work and need care account for only 5%, and the households with other people who cannot work account for 7.2%. Therefore, the measurement results of time spent on these tasks are not statistically reliable due to the very small number of observations. 52% of the surveyed women have young children; therefore, childcare time survey results are more reliable.

Table 13. Impacts of infrastructure on direct UCW: care of children and the elderly

	Change in time spent			Other changes felt	
	Current time (minutes)	Time reduced (minutes)	% time reduced	Cleaner	More convenient
Care of children (N=126)	57.6	2.1	3.6	8.9	8.9
Care of the elderly (N=12)	2.6	1.0	38.5	15.4	7.7
Care of persons incapable of work (N=17)	4.1	0.6	14.6	3.2	3.2

Source: Survey on infrastructure and UCW time in November 2021

[25] Note: the M&R items here are different from the up-gradation work considered in this survey. The M&R work in the surveyed communes was mainly funded by Program 135. The values of M&R items were usually less than VND30 million, used for minor repairs. The M&R items are meant to maintain the functionality of the existing work. Therefore, the M&R items are different from the newly built or upgraded work studied in this research.

The results in Table 13 indicate that the average childcare time in a day is 64 minutes. After the infrastructure works questioned in the survey were put into operation, the estimated reduction in time spent on childcare is only 2.1 minutes/day – meaning that the infrastructure has only helped reduce nearly 3.6% of women's time on childcare. With the remaining two direct UCW groups, the estimated time reduction thanks to the operation of these infrastructure works (with a small number of observations) is also very little. According to the survey results, the extent of direct UCW time reduction is not significant. Besides, the survey results also do neither show any significant change in the "quality" of this UCW group thanks to the infrastructure actions. This may be due to the characteristics of the infrastructure being studied. Health stations and schools are likely to affect the time spent on direct UCW. But in the infrastructure invested in 2016-2020 in the surveyed communes, there were only 04 school projects (including 02 newly built ones, and 02 with the construction of additional classrooms). The infrastructure of this type was invested in the previous period. The group of domestic water facilities has the potential to affect the time on direct UCW, the rate of access to domestic water sources is already quite high. In the period 2016-2020 in the surveyed communes, there were 09 domestic water projects, 06 of which are upgrades, i.e., improving water supply capacity or conducting the major repair of existing domestic water facilities.

Impacts of infrastructure on the time spent on paid work

As shown in Table 3, of the working adults, 79.3% were working in agriculture, and only 20.7% were in non-agriculture. When measuring the time to do paid work, the research team did not measure the time of all household members who were working. Instead, the survey questions were only used to measure the time to do paid work of women who were the respondents to the questionnaires – i.e., the main people in charge of the UCW in the households.

Regarding the impacts of infrastructure work on the time spent on paid work, the survey results in Table 14 show that the majority of women believe that the time to perform their income-generating work has not been affected since the work in their villages built in the period 2016-2020 came into operation. For women who have paid work or are self-employed in non-agriculture, 95% and 92% believe there has been no change to their work time since these infrastructures were put into operation. The group of women working in agriculture (accounting for 81%) said that after these infrastructures were put into operation, there has been no change in their self-employment time in agriculture. With the perception of almost insignificant change, the number of work hours in paid work has changed very little. The last column in Table 14 shows that the actual time changes are insignificant.

Table 14. Change in time spent on paid work since the infrastructure work's completion

	Perception of change				Measure the change	
	No change (%)	Increase a bit (%)	Increase significantly (%)	Don't know (%)	Current work hours	Estimated work hours increased
Paid work	94.9	1.3	1.3	2.5	38.4	0.05
Self-employment in agriculture	100.0	0.0	0.0	0.0	321.9	0.00
Self-employment in non-agriculture	92.0	1.7	2.9	3.4	37.8	0.03

Nguồn: Khảo sát CSHT và thời gian CVCSKL tháng 11/2021

According to this survey, the impacts of infrastructure on the time women spend on paid work are very small, or even insignificant. The paid jobs in the commune are mostly the jobs in the administrative system and public service agencies in the locality (schools, health stations, etc.) with an almost fixed number of jobs. Therefore, infrastructure factors did not influence job opportunities in this group. With self-employed work in non-agriculture, mainly home-based tasks, or work at production facilities of other households in the village, infrastructure conditions did not impact the work time. Infrastructure could have a certain impact on self-employed activities in agriculture, especially roads to production areas. Shortening the travel time can increase the work time in the fields and fields of households. In the surveyed area, there were 10 roads to the production sites invested in the period 2016-2020 (accounting for nearly 25% of all transportation works). But the expected impacts of these roads to production sites on increased self-employed work time in agriculture were not observed in the survey within this research.

3.5 Gender roles, infrastructure, and UCW time

3.5.1 Summary of results on the impacts of infrastructure on UCW

Firstly, it is necessary to emphasize that the impacts of infrastructure on women's time allocation are not much. The estimated time decrease after the infrastructure in 2016-2020 came into operation is 23 minutes/day (including the estimated decrease in time to perform the groups of tasks shown in Table 11 to Table 13). Compared to the average total UCW time of 293 minutes/day (as shown in 10), the time reduced thanks to infrastructure work is estimated to only account for nearly 7.8% of the UCW time of women. It was estimated that the infrastructure work has helped increase the paid work time on average by 5 minutes/day (equivalent to 1.2% of the average time for paid work). With such an extent of impacts, the change in women's UCW burden is quite small and has not probably had any significant impacts on the household labour division.

Table 15 provides data on women's perceptions of how their voices in investing in infrastructure were recognised and absorbed by the government at all levels, by persons in charge, and by construction contractors. With the group on village-level infrastructures, the survey results show that the majority (more than 90%) of women thought that their opinions were received and recognised to a certain extent. Only about 5% believed that their opinions on the infrastructure, the priority selection were significantly recognised and received by the village representatives, and by representatives of the communal government. Construction contractors received and recognised women's opinions at a level lower than the government's. The data shows that 20% of women thought that contractors did not listen to women's opinions, and 75% assumed that they recognised at a certain level. In FGDs, most commune officers said that women's opinions in the planning meetings to prioritize infrastructure actions were recognised equally to men's. Many commune officers seemed to still have prejudice when they said that "women have little understanding of construction, so women's opinions cannot be as good as men's". Not to mention, in some ethnic groups (for example Mong in Then Sin commune), due to local customs and habits, the voice of women in the family and society is limited, so in the planning meetings to prioritize work, women "attended meetings just to fulfil the list of household representatives" and they hesitated in raising their voice. The men mostly raised the opinions recognised in meetings.

Overall speaking, with small-scale infrastructure in villages, women commonly perceive that they had a limited voice. Notably, there is almost no significant difference in their perception of commune-level and village-level infrastructure. When separating these two groups of infrastructure (commune and village levels), the research team supposed that with small-scale village-level infrastructure that women directly used, they would have the opportunity to have a stronger voice in the construction process. But this was proved not to be the case here. The reason may be that: infrastructures, whether at the village or commune level, are all invested by the communes and are implemented following a similar process, resulting in no difference in women's voice in the investment process of these two infrastructure groups.

Table 15. Perception of women's voice in investment in infrastructure[26]

	Level of recognition (%)			
	No	Little	Significant	Don't know
Women's voice in infrastructure investment at the village level				
Are the opinions and priority selection of women recognised by village representatives?	2.6	90.8	5.7	0.9
Are the opinions and priority selection of women recognised by the commune government?	2.2	92.5	4.4	0.9
Are the opinions and priority selection of women recognised by contractors?	20.2	75.4	3.1	1.3
Women's voice in infrastructure investment at the commune level				
Are the opinions and priority selection of women recognised by commune representatives?	10.1	84.2	4.4	1.3
Are the opinions and priority selection of women recognised by the commune government?	3.9	91.2	3.9	0.9
Are the opinions and priority selection of women recognised by contractors?	20.6	75.4	3.1	0.9

Source: Survey on infrastructure and UCW time in November 2021

Women's general perception is that they have a limited voice. The gender responsiveness of infrastructure work is quite low (data in Table 8 show that infrastructure work could only guarantee 34.4% of gender-responsive requirements). The infrastructure impacts on women's UCW burden are also quite limited. Indeed, Table 16 presents the results of women's perception of the change in general in the UCW burden after the infrastructure came into operation. In the questionnaire, the research team presented the situation that if the UCW burden before the infrastructure work (in the list of the commune and village-level infrastructure work selected for the survey) is at level 10, then since the operation of such work, where has been the level of the UCW burden on a scale of 1 to 10. The survey results show that 18.5% thought that the infrastructure almost did not reduce the UCW burden (10 to 9). Almost 48% of women respondents thought that the infrastructures after being put into operation have had certain impacts on the UCW burden (they scored 7 and 8/10). Nearly one-third of women (32.4%) thought that after the infrastructure came into operation, their UCW burden decreased (score 4-6/10). Women's general perception about the impacts of infrastructure work on reduced UCW burden in this part seems more optimistic than the data collected on the reduction in time spent on UCW presented in the previous part.

[26] With the tables in this section, all respective questions were answered without any questions left blank. Therefore, the number of observations was not included in the tables as in section 3.4.2 above.

Table 16. The general perception of UCW since the infrastructure work's completion

UCW scale	1	2	3	4	5	6	7	8	9	10
Rate (%)	0	0	1.3	3.9	8.8	19.7	28.1	19.7	11.0	7.5
Level	Basically reduce			Reduce			Reduce a bit		Almost no reduction	

Source: Survey on infrastructure and UCW time in November 2021

In the FGDs with commune officers, when discussing to rank infrastructure by their impact level on UCW, each commune usually only selected 2-4 types of infrastructure that reduced the UCW burden. Specifically, roads were usually ranked with the highest reduction, followed by domestic water work and irrigation canals. Meanwhile, according to women's opinions in FGDs at the village level, the most common infrastructure that reduced women's housework time was transportation work/roads. When the research team facilitated FGDs to rank the infrastructure by their impacts on reducing the UCW for women, most of the infrastructure (usually roads and domestic water work) were assessed as "reduce a bit/moderately". A few projects (2-3 roads, electricity facilities) were assessed as "reduced significantly". The rest including the repair of schools, health stations, cultural houses, market gates, football fields, headquarters of the People's Committees, etc., were assessed by women to have "no change".

3.5.2 Factors affecting women's decision on time allocation

Table 17 presents more in-depth results on the impacts of infrastructure on UCW burden. The research team asked them if the housework time decreased and how women would reallocate that reduced time to other tasks.[27] The survey results show that nearly 77% of women said that they spent that reduced UCW time to rest, entertain and take care of themselves; 12% said they increased exchanging/meeting with friends. Notably, very few women said they used that time to grasp more information and knowledge. This can be explained for two reasons. Firstly, the UCW time was not reduced by much, which did not free up lots of their time. Secondly, the surveyed women are either close to or in middle age (the average age of women in the survey is 39). Therefore, there is a pretty limited opportunity to learn more knowledge or skills.

Table 17. Reallocation of time after reducing UCW burden

Reallocation of time for activity groups	Percentage
Rest, entertain, take care of yourself	76.9
Learn (self-study) more knowledge, skills, grasp more information	1.6
Meet/exchange with friends (including exchanges via online platforms)	11.8
Participate more in income-generating activities	9.7

Source: Survey on infrastructure and UCW time in November 2021

[27] The results would be more detailed if this question could be asked for the sub-groups corresponding to different levels: a slight decrease, a significant decrease, and a very significant decrease. However, due to the small sample size of the survey, detailed analysis by such groups would produce unreliable average results because of the tiny number of observations if divided into such sub-groups.

Survey results in Table 17 are also similar to some FGDs' results. Women participating in FGDs said they first spent more time resting and self-care when the housework time was reduced. For women in commercial production regions (for example, tea-growing sites) such as Then Sin and Ban Bo (Lai Chau) communes, in the past, women were busy spending time almost every day on the tea fields to tender and pick/harvest tea leaves. The improved infrastructure led to a reduction in women's time travelling to tea fields to pick and sell tea leaves, then women could rest more and prepare better lunches for their children. In non-commercial production regions, FGDs results show that women had more time to rest, and meet their friends. Some Muong ethnic women in Cao Son commune said that when they had free time, they spent more time taking their children to/from school, and taking care of them (e.g., preparing nutritional breakfasts for their children, or taking their children to/from school instead of asking someone else to do it). A few Kinh, Dao, and Pa Then women (Dong Tam village and Pa Vay Su village, Yen Thanh commune, Ha Giang) said they would play volleyball, sports, dance and sing. Some Dao women living in villages far from the commune centre (for example, Na Ut village, Ban Bo commune, Lai Chau) said they used their free time embroidering and weaving their traditional ethnic costumes.

It is also noted that nearly 10% of women said that with the UCW time reduction, they engaged more in income-generating activities. 10% is quite a modest percentage and lower than the initial prediction of the research team. This resulted from the same two reasons. Firstly, increased paid work time requires women to be significantly and stably liberated from the UCW burden, especially paid work opportunities. Secondly, the surveyed areas are the extremely difficult communes with limited opportunities for paid jobs. If they want to participate in the paid job market, they usually migrate to urban areas or work in industrial zones. The World Bank and the CEMA (2019) report shows the increasing importance of migrant workers to the socio-economic development in ethnic minority areas. But for married women, and middle-aged women in ethnic minority areas, access paid jobs is very limited. Therefore, even when the UCW time is reduced, finding an income-generating job is a challenge.

To further clarify the factors affecting the decisions on time allocation to different tasks, Table 18 and Table 19 further present some remarkable findings on women's decision-making rights. The research team asked, in cases, there was more time saved from UCW time reduction, who would decide on how to use such time. Table 18 presents the findings on the right to decision-making on time reallocation to other activities (other than income-generating activities, e.g., entertainment, self-care, resting, meeting/exchanging with friends, etc.). Notably, 71% of women said they made their own decisions on allocating time to other activities (other than paid work), and 29% said that both husband and wife discussed and decided together. It can be seen that women's autonomy (efficacy) regarding their time reallocation to other activities is high. This is also consistent with the information concluded from the FGDs that women decided on their own on reallocating their time to other tasks. Even in the ethnic groups bearing the perception for long that women's voice in the family is more limited than that of men, such as the Mong, Dao, and Pa Then groups, women are still the main decision-makers regarding this time reallocation, in some households, both husband and wife decide together.

Table 18. Right to decision-making in allocating time to other tasks

Right to decision-making	Rate
I make my own decision	71.0
I and my husband make decisions together	29.0
My husband or other family members request me to/makes decisions	0
My husband or other family members suggests/comments	0

Source: Survey on infrastructure and UCW time in November 2021

The survey findings on women's right to decision-making on their time reallocation to income-generating activities are reflected in Table 19. The survey data also show the high level of women's proactiveness and self-determination in reallocating their time for paid work (with nearly 89% saying they decided themselves). However, this result should be viewed with caution because the number of observations/ respondents in the village is quite low, and mostly they are women doing paid jobs. In fact, the decision on women's participation in ime-generattant to the labor division and gender roles in the household. Given its importance and complexity (in gender roles, and women's economic power), there could be many more complex factors influencing the decision-making process that could not be fully measured within the scope of this small survey sample size. The information from the women FGDs is not enough to explain more deeply about women's right to decision-making on time reallocation to paid work because the number of women who did reallocate their time to paid work is very small. Among the surveyed villages, there are only a small number of Dao women (Dong Tam village, Yen Thanh commune, Ha Giang), or Tay women (Lu Thuong village, Tan Bac commune, Ha Giang) who reallocate their time to paid work e.g., work as seasonal hired labourers for a few days in a year. Most of the women said that they made their own decision on working as hired labourers.

Table 19. Right to decision-making in re-allocating time for paid work

Right to decision-making	Rate
I make my own decision	88.9
I and my husband make decisions together	0
My husband or other family members request me to/make decisions	5.6
My husband or other family members suggests/comments	5.6

Source: Survey on infrastructure and UCW time in November 2021

UCW sharing is an important issue on gender equality. Increased sharing in UCW is not only about reduced UCW burden on women, but also about the role and status of women in the household, and in the community. This topic was explored through a group of questions about women's perceptions of the UCW sharing and their feelings about change (if any). Table 20 reveals women's feelings about the UCW sharing by the men in the family (husband, brothers, etc.). The results indicate that 40.4% of women believe that UCWs are the responsibility of women, and 53% believe that "It's okay for a man to share housework, but if he does not share it's also accepted". This result is pretty negative as opposed to the prediction of the research team. Those figures show women's "acceptance" and "tolerance", they consider the UCW burden their duty by default. With this mindset, it is more likely that women in the surveyed area will be "passive" or at least not "drastic" in promoting the UCW sharing by their husbands or other family male members.

Table 20. Perception of men's sharing of UCW

Perception of sharing UCW	Rate (%)
Family care tasks (housework) are the responsibility of women	40.4
It's okay for a man to share housework, but if he does not share it's also accepted	53.1
That's the local cultural custom, women by default have to do housework whether they want to or not	3.1
A woman who is not good at housework is not proficient	3.5

Source: Survey on infrastructure and UCW time in November 2021

The survey results in Table 20 on women's perception of UCW sharing are similar to the women's responses to the survey question on who shares the UCW burden. The survey results in Table 21 indicate ththe husband among family membersth his wife. The husbands most share tasks of fetching water, taking children to/from school, and taking care of young children. For the remaining UCW groups, more or less one-third of the women thought that their husbands did share work with them.[28] Besides the husband, young children in the family also share some UCW (or are forced to do/share), especially with the UCW group of cooking, cleaning, washing, and tidying (with nearly 20% of the children sharing UCW work with their mothers). Notably, the last column of Table 21 presents a fairly high percentage of women who said that there was no one to support them, to share the UCW burden with them, especially when it came to the tasks of collecting firewood, cooking, cleaning and washing, tidying houses, and taking care of persons incapable of work. Thus, there has been UCW sharing by household members in practice, especially by the husband. However, the burden of these tasks remains mainly on women's shoulders.

Table 21. UCW sharing by family members

	No. of observations	Children/ nieces/ nephews	Brothers/ sisters	Parents/ grandparents	Husband	None
Fetch water	45	16.7	0.0	4.2	58.3	20.8
Collect firewood	182	10.4	0.5	2.2	29.0	57.9
Take child to/from school	103	9.0	0.7	6.0	67.9	16.4
Cook, clean	210	19.3	1.6	7.1	36.4	35.7
Wash clothes, clean/tidy	210	19.0	1.5	6.3	34.6	38.5
Care of children	126	8.8	1.0	9.8	54.9	25.5
Care of the elderly	7	7.1	0.0	0.0	50	42.9
Care of persons incapable of work	17	18.8	0.0	12.6	31.3	37.5

Nguồn: Khảo sát CSHT và thời gian CVCSKL tháng 11/2021

Information from the FGDs shows that the gender division of labour varies in different families i.e., young nuclear families and extended families with many generations living together. Usually, in nuclear families, men share/do more housework. In extended families, the ones mainly in charge of UCW are mothers-in-law and daughters-in-law. Moreover, UCW sharing with women in different ethnic groups also varies. In the survey sample, Kinh, Thai, Tay, and Muong families, there are opinions that men and women are more equal in UCW sharing. However, with the families of the Dao, Mong, Pa Then, and Lao, etc. ethnic groups, men rarely share UCW with women. There are some comments of women in the FGDs where the Mong and Dao people stipulated that in multiple-generation families, the daughters-in-law were in charge of UCW, especially the dishwashing was by default the duty of daughters-in-law. In the households of some ethnic groups like Pa Then, men often drink alcohol in the afternoon, so they rarely help, mostly women do UCWs.

[28] The sharing in the care of the elderly received only 7 responses, hence it was not analysed.

In that context, the results in the Table 22 are logical with women's actual perception of UCW sharing. In response to the question of how they feel about the change (if any) in the UCW sharing recently, nearly one-third of women said that there was no change; about one-third thought that there has been certain, but limited, sharing by husbands and men in the family (brothers, father-in-law, etc.). Therefore, the UCW burden in the surveyed area remains a burden for women, and there has not been much change in the household division of labor recently. This result is generally quite consistent with the information gained from the FGDs with village women. According to the FGD women, those who share housework are mainly their mothers-in-law (in extended multi-generation families) or husbands (in the 2-generation nuclear family). However, even when the husband is considered the main person who shares UCW burden with women, the level of sharing remains only moderate or little. Besides, in households where the men migrate to work far away, UCW sharing is not feasible. Even in households where the husbands do not migrate to work far away, there is a common belief that the men working as hired labourers (near their houses) have to work hard to earn money, so the UCW responsibility belongs to women.

Table 22. Perception of changes in men's UCW sharing

Perception of changes in UCW sharing	Rate (%)
No change. I am still the main person in charge	30.3
My husband and other male family members (brothers, etc.) share a bit	32.9
My husband and other male family members (brothers, etc.) share significantly, yet I am still the main person in charge	25.9
It's equal, our health condition and the work nature determine who will do it.	11.0

Source: Survey on infrastructure and UCW time in November 2021

To explore gender roles at a scale larger than the household level, the research team asked several questions about women's feelings about the changes in the belief/perception of local people (in the village, in the commune) towards women's responsibilities for housework. The survey results presented in Table 22 below show a "picture" similar to the survey results on the changes in gender roles in the family. Nearly two-thirds of women said that there have not been significant changes in gender roles related to UCW in the family, the table below points out that 28% of women did not feel a significant change in gender roles of women, and 54.5% thought that there was a bit change, yet UCW persisted mainly the responsibility of women.

Table 23. Perception of women's gender roles

Perception of women's roles	Rate (%)
No significant changes at all	28.1
There are some initial changes, but many people still believe that women are the ones mainly responsible for housework	54.4
There have been significant changes, many people think that housework belongs to both men and women	17.5

Source: Survey on infrastructure and UCW time in November 2021

According to FGDs, many women have seen initial changes, though slow, in gender roles. The most obvious change could be seen when they compared their husbands and parents at FGD time and in the past. According to the women, young men have more access to gender equality stereotypes/norms in the general education system; access to mass information, movies from the media, television, internet; exchanges with men of other ethnic groups while migrating out of their hometown to work; and especially recently, there have been many training courses and communication sessions on gender equality held by different projects in local areas, therefore there has been a change in gender stereotypes. Men now begin to consider that housework does not belong only to women and they start sharing housework with women. However, as mentioned above, the barriers against the change in gender roles mostly come from the women when many of them keep assuming that housework is mostly the responsibility of women. This result indicates that it's very challenging to reduce the UCW burden on women as set out in the National Strategy on Gender Equality in 2021-2030 (the Resolution No. 28/NQ-CP of the Government[29]).

[29] Resolution No. 28/NQ-CP dated 3 March 2021 of the Government promulgating the National Strategy on Gender Equality in 2021-2030

4 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

About this research

Investment in infrastructure is an investment that uses the most resources and has also been considered the most important investment in the policy system for socio-economic development in rural and mountainous areas of Vietnam over the years. In the NTPs - the main tools to promote socio-economic development in these areas - infrastructure investment always accounts for over 70% of total investment capital from the State budget. Given that context, this research is the first to make an in-depth assessment of the gender responsiveness of infrastructure work and the impacts of infrastructure on women's UCW burden.

The research used main tools including the Checklist on gender responsiveness of infrastructure work, a household survey with women respondents representing their households, and FGDs with representatives of Commune People's Committee and some women in 12 villages, of 06 communes in Hoa Binh, Ha Giang, and Lai Chau provinces. To explore the gender responsiveness level of infrastructure work, the research team asked 10 criteria on the level of gender responsiveness. These criteria were assessed from the perspectives of the commune officers and village women. To learn about the relationship between the infrastructure and UCW and paid work, the research team used an 18-page household questionnaire with questions on related aspects. Based on the available time and resources, the research team assessed using the checklists on 266 infrastructure work, collected information from 236 women as household representatives, and conducted FGDs with 107 Commune People's Committee officers, village women joining the FGDs. The research team did not have much reference information since this is the first study on this topic. The results presented in this report were based on self-collected primary information.

Gender responsiveness of infrastructure

Survey results show that the infrastructure in surveyed communes in 2016-2020 had an average investment value of about VND806 million/ infrastructure. Regarding the type of infrastructure, the surveyed communes mostly received investment in transportation (64.7%); followed by domestic water and electricity, (10.9%), irrigation (8.3%) and other public infrastructure such as community houses, markets, schools, health stations, etc. (16.2%). Investment capital sources mostly came from the NTPs (accounting for nearly 74%) and the central budget other than the NTPs (11%). Local budgets could only cover nearly 13% of the infrastructure at commune and village levels. Funding from international organisations for infrastructures was very few, only accounting for 1%.

The gender responsiveness of infrastructure in the surveyed communes, according to public opinions, is below the low level. On average, the total score of gender responsiveness of infrastructure was only 34.4/100 points. Thus, if 100 is considered the maximum score for gender responsiveness of infrastructure, then, in reality, commune and village-level infrastructure in the surveyed area only met 34.4%, which is about 1/3 of the requirements. In terms of gender responsiveness by the size of the work, the smaller the work is, the more gender-responsive it is. The infrastructure of which the capital resources are less than VND500 million (usually NTP-NRD) received the highest total scores on women's participation. Those having more community participation are also more gender-responsive. By the types of work, the level of gender responsiveness of rural transportation work is perceived by the public to be the highest. The average score of gender responsiveness of transportation as assessed by local people is 41.4/100; infrastructure actions

such as schools, health stations, etc. are the least gender-responsive. Notably, the infrastructure where communes are investment owners is more gender-responsive.

Women's UCW burden and impacts of the infrastructure on UCW

Women's total time on UCW in a day in the surveyed area is nearly 292 minutes, i.e., 4.9 hours/day. In which, the indirect UCWs such as going to the market, fetching water, collecting firewood, taking children to/from school, cooking, cleaning, and washing take up 228 minutes (i.e., 3.8 hours), the direct UCWs such as taking care of young children, the elderly, persons incapable of work takes up 64 minutes (equivalent to 1.1 hours). Thus, a woman mainly responsible for the UCW in the surveyed area must spend more than 20% of her daily time on the UCW. This average time is higher than the survey result by ActionAid Vietnam and MOLISA (2017) (on average 4.06 hours/day). In this research, the survey subjects were women in communes having extremely difficult socio-economic conditions and areas with a high ethnic minority population. In contrast, the survey conducted by ActionAid Vietnam and MOLISA (2017) was conducted in various regions with different socio-economic conditions. The average duration women spend on paid work is 398 minutes/day (equivalent to 6.6 hours), 1.8 hours/day higher than their UCW time. The total "active work time" including UCW and paid work of women is on average 11.5 hours/day.

Research results show that the infrastructure has not impacted women's time allocation in the surveyed areas.

- With the UCW, the total estimated time decreased after the infrastructure work in 2016-2020 came into operation is 23 minutes/day. Time reduction (thanks to the infrastructure work) to go to the market, take the children to school, and cook and clean accounted for 83% of total UCW time reduction after the works were put into operation. Compared to the average total UCW time, it is estimated that the time reduced thanks to infrastructure work only accounts for nearly 7.8% of the UCW time of women.
- With the paid work, it is estimated that the infrastructure has helped increase the paid work time on average by 5 minutes/day (equivalent to 1.2% of the average time for paid work). Hence, the total reduced UCW time and increased paid work time is only 28 minutes/day, equivalent to nearly 4% of the average work "time" of women.
- With such an extent of impacts, the change in women's UCW burden is quite small and has not probably had any significant impacts on the household labour division. The impact of infrastructure on women's time allocation in the survey sample is insignificant. This may be because access to essential infrastructure in the surveyed communes was improved over a long period of Program 135 implementation (nearly 2 decades) and NTP NRD (nearly 10 years), so the additional impact of new infrastructure work on UCW and paid work time is not high.

Some factors affecting the relationship between infrastructure and women's UCW burden

Gender responsiveness of infrastructure is an important factor affecting the magnitude of the impacts of infrastructure on women's UCW burden. With the sample size in this report, it is not feasible to measure the impacts of gender responsiveness on the UCW time (e.g., using some regression models). However, the qualitative data obtained from the FGDs and some findings from the questionnaire survey show that the higher the level of gender responsiveness is, the more likely it is for the infrastructure work to lead to a reduced UCW burden. This research points out some factors that affect the gender responsiveness of infrastructure, including decentralization and empowerment for the grassroots level, scale of work, and type of work.

The current status (or starting point) of the time allocation also has an important influence on the relationship between infrastructure work and the UCW burden of UCW. Given the socio-economic conditions

of the surveyed areas i.e., extremely difficult areas, the ethnic minority areas, the work burden including both UCW and paid work of women is pretty heavy (taking up nearly half of the total time in a day). The impacts of infrastructure on time allocation will depend on the decision on time allocation to different work (task) groups. However, due to the low gender responsiveness level of infrastructure, and limited infrastructure impacts on UCW and paid work time, it was not enough to "activate" the interaction process to lead to changes in the household division of labour.

When the infrastructure reduces the UCW burden, women use that time on their resting rather than on paid work. According to survey data, the infrastructure implemented in 2016-2020 in communes and villages after being put into operation, has helped reduce 23 minutes/day spent doing UCW. Out of that very little reduction in time, 22% is spent on paid work, the rest is spent mainly resting.

The survey results also show that women have fairly independent decision-making power on time use, with nearly two-thirds of all surveyed women saying that they could decide on their own on their time allocation. Unfortunately, infrastructure has little impact on the time increase/decrease of women's work, thus this study did not have the opportunity to find further evidence on the decision-making process related to women's time reallocation.

This research also shows that one reason for the heavy UCW burden on women's shoulders is the inherent perception of gender roles. The women who participated in this survey also assume that UCW is primarily their responsibility; the UCW sharing by their husbands and other family members is the secondary, "it's okay for a man to share housework, but if he does not share it's also accepted". With that perception, "by default", women "believe thoroughly" that the UCW is of course their burden. According to the survey results, such perception of gender roles has not changed significantly recently. It suggests that to reduce UCW burden on women and increase UCW sharing by other family members, it is necessary to gradually change the perception of gender stereotypes and gender roles.

4.2 Some policy recommendations

Promote decentralization and empowerment in the NTPs: In the NTPs, it is necessary to strengthen the decentralization of capital resources for the commune to act as the investment owners, because when the communes are investment owners, the opportunity for women to participate and benefit from the infrastructure-related activities will be higher. Please note that currently, the percentage of communes that have been decentralized to act as investment owners using the funds from the NTPs is already quite high. Particularly under Program 135 in 2016-2020, about 70% of communes were decentralized to act as investment owners (MOLISA, 2020). However, it is important to ensure their "substantive" investment owners role rather than "on paper" investment owners. In construction work where the grassroots government plays the role of "substantive" investment owner, the opportunity for public consultation will be higher than when higher Government levels act as investment owners. To ensure the right to be substantive investment owners at the grassroots level, the experience of some provinces (such as Hoa Binh) shows that they require a strong direction from the province to ensure that the district level will decentralize or have a roadmap to decentralize and empower the communal level substantively.

Promote the application of specific mechanisms in infrastructure investment: the specific mechanism in infrastructure investment from the funding resources of NTPs has been institutionalized by Decree No. 161/2016/ND-CP. This specific mechanism is being further promoted in infrastructure investment using funds from the NTPs in the period 2021-2025 as specified in the Decree on the mechanism for management and implementation of the NTPs (draft, to be approved soon). Promoting the implementation of specific mechanisms in infrastructure investment will increase opportunities for women to engage more in all stages of the investment process. To do that, provincial (and district) governments need to have policies on the sanctions to assure the minimum rate of infrastructure applying specific mechanisms suitable to

each locality, apply the method of " infrastructure work contractual assignments" to promote substantive decentralization to the commune level, to substantively empower the village community to self-manage, self-implement small-scale and simple technical infrastructure (especially infrastructure of under VND500 million), thereby increasing the opportunity for the infrastructure to be gender-responsive.

Regarding infrastructure planning and implementation under the NTPs: It is necessary to develop guidelines on gender integration in the participatory planning and implementation, management and use of infrastructure in communes and villages. Guidelines should be simple, easy to understand, and easy to apply by grassroots staff and ethnic minority men/women, there should be a brief list of questions to be answered in each step of infrastructure planning and implementation. At the same time, pilot the development of a set of participatory monitoring and evaluation criteria on the gender responsiveness of infrastructure, which then could be completed, replicated, and institutionalized in local regulations. The criteria to assess the gender responsiveness level of infrastructure used in this research could be used as monitoring criteria.

Regarding infrastructure investment priority under the NTPs: Specific investment priorities will be determined during participatory planning (proposed by male/female villagers and selected/prioritized in communal planning meetings with representatives of villages). In which, priority should be given to rural transportation, clean water facilities; electricity grid facilities, and school sites in difficult villages that have the potential to significantly reduce women's care work time. Results of this research show that ethnic minority women mainly spend their free time on recreational activities, resting and community activities in the village when their UCW burden is reduced thanks to the infrastructure; it is, therefore, also necessary to pay attention to investing in cultural and sport structures suitable for the women's use and benefit such as volleyball courts, village cultural houses. "Spiritual/software" supporting activities must also be included, because "hardware" - infrastructure alone is not enough to lead to significant changes in gender roles, household division of labour, for example, it is needed to pay attention to supporting the development of sports and cultural movements, etc. of men/women in the villages.

Add regulations on ensuring gender-responsive infrastructure investment funded by NTPs: Unfortunately, the infrastructure funded by international projects in 2016-2020 only accounted for 1% of all the infrastructure. It is not enough to generate a meaningful comparison result. But the international experience of international development banks (such as ADB, WB) or other development partners has shown that it is necessary to conduct a gender impact assessment before the investment. Based on the assessment results, appropriate gender actions in infrastructure could be considered. This practice applies to large-scale funded projects and small and micro infrastructure investments in many poverty reduction projects. To not further complicate the procedure for public investment in infrastructure sub-projects funded by the NTPs, gender assessment and measures to ensure gender equality should be included as content in the economic - technical reports or work documents (for work following specific mechanism).

Regarding capacity building in the NTPs: To assure women's participation, substantive benefit, and ensure women's voice is heard in the entire process of implementation, use of and benefit from infrastructure, the NTPs (and other funded projects, such as CVN's projects) need to effectively organise communication and capacity building activities for ethnic minority women, especially those from poor and near-poor households in a hands-on manner, promote the role of core women in the villages in each specific work, project, and group model (refer to the experience of organisations such as DWC, RIC in applying the "community management" and "participatory work/infrastructure maintenance and repair" method). Capacity-building activities need to be associated with activities that encourage and mobilize both women and men in the family to participate in and implement infrastructure actions, projects, and community-based groups.

Regarding employment development: In the NTPs and the implementation of socio-economic development in provinces, it is necessary to have specific policies to promote job opportunities, especially to allocate resources to develop models and projects to create on-site off-farm jobs for ethnic minority women (closely linked to tourism development, primary processing and processing of agricultural products, participation in the value chain of specific and typical local products). Only when there are local job opportunities, could the change in the UCW time lead to considerations in participating in paid work, lead to a change in the internal household division of labour, and thereby change women's position and power to decision-making on time allocation to household chores.

Actions to promote change in gender stereotypes and gender roles: if the above recommendations are more about outside motivators, and more or less from the "supply-side", the change in gender stereotypes, gender roles in the family and community are about promoting women's time reallocation from "inside", from the "demand-side". This report shows that the perceptions of gender roles and gender stereotypes are important factors affecting the redistribution of women's UCW burden. External impacts would not lead to the desired changes if gender stereotypes prevent women from redistributing the UCW burden. NTPs should pay attention to the communication activities that promote changes in gender stereotypes. In this regard, Project 8 within the NTP-SEDEMA 2021-2025, which includes the content on promoting community-based communication and promoting changes, is an appropriate direction to promote gender equality.

Annexe. Criteria to score in each question on gender responsiveness of infrastructure

1. Were there village meetings organised to propose priorities for infrastructure construction?	**2. If there were village meetings, how were women's opinions/comments in the village meeting(s)?**	**3. Why was this infrastructure selected for construction?**	**4. Which of the following statement best describe the design of the infrastructure:**	**5. Phụ nữ có tham gia quá trình thi công xây dựng công trình?**
1. Yes =10 points 2. No =0 points 3. Don't know = 0 points	1. Women provided few comments = 3 points 2. Women provided as many comments as men did = 6 points 3. Women provided more comments than men = 10 points 4. Don't know = 0 points	1. Many women supported this infrastructure = 10 points 2. Many men supported = 3 points 3. Both men and women supported equally = 6 points 4. Neither learnt about the needs of men nor women = 0 points 5. Don't know/no reply = 0 points	1. Meet women's needs = 10 points 2. Meet men's needs = 3 points 3. Meet men's and women's needs equally = 6 points 4. Neither meet the needs of men nor women = 0 points 5. Don't know = 0 points	1. No = 0 points 2. Participated as unpaid workers (voluntary, as household's counterpart contribution) = 10 points 3. Participated in paid simple manual work = 6 points 4. Participated in paid technical work = 6 points 5. Don't know = 0 points
6. Did women participate in the monitoring and acceptance of the infrastructure?	**7. Is the infrastructure still in use now?**	**8. The level of use and benefit of the infrastructure by women and men?**	**9. Does the infrastructure help women reduce time for housework?**	**10. Does the infrastructure help women increase their opportunities of getting a job (do local jobs, migrate to work)?**
1. Women did not participate in the monitoring and acceptance process = 0 points 2. Women participated in the monitoring and acceptance process, but not as much as men did = 5 points 3. Women participated in the monitoring and acceptance process as much as or more than men did = 10 points 3. Don't know = 0 points	1. Yes = 10 points 2. Damaged, broken, being unused = 0 points 3. Don't know = 0 points	1. Women use and benefit from the infrastructure less than men do = 3 points 2. Women use and benefit from the infrastructure as much as men do = 6 points 3. Women use and benefit from the infrastructure more than men do = 10 points 4. Don't know = 0 points	1. Reduce sharply = 10 points 2. Reduce a bit/ insignificantly = 6 points 3. No change = 3 points 4. Don't know = 0 points	1. Increase sharply = 10 points 2. Increase a bit/ insignificantly = 6 points 3. No change in women's job opportunities = 3 points 4. Don't know = 0 points

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