Abstract

Voluntary repatriation has the utmost importance in the contemporary understanding of refugee protection. Voluntary repatriation in safety and with dignity is considered to be the most desirable and durable solutions for refugees. However, voluntary repatriation represents increasingly daunting challenges to the refugees, the governments of both home and host countries, and implementing partners. The repatriation planning of Rohingya refugees is widely criticized as being profoundly premature and dangerous. Most of the refugees are set to return to destroyed villages where food and shelter are inadequate, ecosystem services overstretched, livelihood opportunities marginal and the physical environment unfit for human habitation. Investigating the view and perspectives of the refugees on the factors that influence their intention to return can inform the implementing actors to secure those conditions and ensure a durable solution. Here, we identify the conditions that influence the decisions by Rohingya refugees in protracted displacement regarding return to Myanmar. This research also addresses the dual challenges of repatriation and sustainable post-conflict reconstruction, and, more specifically, provides a framework on how to integrate ecosystem services in the repatriation process.

Key words: repatriation, Rohingya, Myanmar, ecosystem services, livelihood, well-being.

1. Introduction

Over the past few decades, the international community has recognized several fundamental challenges for peace and security in Myanmar as the country starts on a democratic path after decades of military rule. Key among these is the violence in Rakhine state bordering Bangladesh; the repatriation of the refugees and Internally Displaced Persons (IDPs); and the governance of natural resources and ecosystem services (Kuok, 2014; Taniparti, 2018). While political and military issues remain critical, socio-economic threats including poverty, environmental degradation, natural hazards and infectious diseases are also significant contributing factors to the formation of conflict and security in Myanmar (Christophersen & Stave, 2018; Jolliffe, 2014) As of 2016,
at least eleven of the country’s fourteen states are affected by active long-lasting conflicts (Strachan, 2017). Those conflicts have severely impacted the country’s political trajectory, economic growth, and human development. In 2015 and 2016, a total of 1,022 clashes between the government and Ethnic Armed Organizations (EAOs) were recorded across 63 townships (OCHA, 2015). Since 2012, over 742,000 refugees have fled ethnic cleansing in the northern Rakhine state (Human Rights Watch, 2018b; UNHCR, 2019b).

This influx of Rohingya refugees in Bangladesh has triggered one of the fastest-growing and largest refugee crisis in the world (Buchanan-Smith & Islam, 2018). The accommodation, relocation, repatriation and resettlement are some of the most challenging issues for both of the governments of Bangladesh and Myanmar, and international humanitarian organizations (Ali, 2020). Scholars in the past have recognized that enormous scale of refugee exodus put pressure on the host community and strain their already scarce resources (Babu & Hassan, 1995; Bilsborrow, 2013; Goldbach et al., 2018; Homer-Dixon, 2015; Hunter et al., 2015). Myanmar and Bangladesh have agreed to set a timeframe for repatriation of the Rohingyas within two years. The agreement signed in November 2017 raised massive concern about the prospect of forcibly repatriating them and caused fear, anxiety and confusion among the refugees (Taniparti, 2018). In response, UNHCR and the government of Bangladesh signed an MoU in April 2018 to establish a framework of cooperation for the safe, voluntary and dignified return of refugees (UNHCR, 2018a). UNHCR (2018a) has noted that the conditions in Rakhine state are not favourable for safe, dignified and sustainable repatriation. Creating such conditions must go beyond building infrastructure and providing for logistical arrangements. The Rohingyas have repeatedly requested transparency about their security, legal status and the ability to meet basic needs back home (Asia Pacific Refugee Rights Network, 2019; Xchange, 2018). The core components of repatriation and resettlement must encompass physical, legal and material safety (UNHCR, 1993). Satellite imagery analysis conducted by (UNITAR-UNOSAT, 2018) revealed widespread destruction of housing, land and property (HLP) in Rakhine stated during 2017-2018.

Apart from security and legal status issues, health, livelihood, and access to resources influence repatriation and peacebuilding. It is imperative to address environmental risks and natural resources, and HLP restitution as part of post-conflict reconstruction (United Nations Environment Programme, 2009a). Failure to do so can result in large-scale ecosystem deterioration and undermine the fragile foundation of peace. The way natural resources and the environment are governed can influence peace and security and can contribute to a relapse into conflict (Mifsud-Bonnici, 2013). Understanding the intricate relationships among the environment, security, and sustainable socio-economic development in the pursuit of peace and stability in Myanmar is imperative. Natural resource management practices have already produced positive peacebuilding impacts in conflict-affected regions in the southern part of Myanmar (Gray, 2019). While "high-value" resources constitute a significant threat to peace in other parts of Myanmar (United Nations Environment Programme, 2009a), access to essential ecosystem services for livelihoods can comprise more urgent needs for the populations in Rakhine state. Previous literature and reports focusing on Rohingya repatriation have largely failed to address these challenges in their analysis (ACRS, 2017; François et al., 2018; Milton et al., 2017; Taniparti, 2018; Ware & Laoutides, 2019)
Hence, the objective of this research is to develop a conceptual framework that includes challenges inherent in conflict and broad strategies to guide international support at different phases of the repatriation cycle. Moreover, understanding the needs, concerns and expectations of Rohingya refugees through this framework is a significant aim of this paper. Within such a framework refugees can be part of a durable solutions strategy and take an active role in shaping their futures. In this paper, we refer to ecosystem services as all the elements of nature that directly or indirectly benefit people, including freshwater, land, forest and marine resources, air and minerals. Human well-being has been regarded as a fundamental component of the ecosystem service paradigm (Millennium Ecosystem Assessment, 2005). This concept is pivotal in understanding the link between natural capital and human livelihood, and it allows consideration of how environmental issues relate to other factors that influence societal challenges (Plant & Ryan, 2013). While it is generally recognized that notions of post-conflict reconstruction and human well-being during the post-conflict period go beyond repatriation, the inclusion of dimensions such as citizenship laws or freedom of movement together with the concept of ecosystem services is poorly conceptualized in the literature. The research intends to measure the primary issues that directly affect current approaches to include ecosystem services into repatriation decision making.

The findings will help to identify the ways to mainstream ecosystem services and environmental governance into assessing refugee repatriation. We conceptualized the potential operational challenges of repatriation that help governments and international humanitarian organizations make evidence-based decisions. This research also aims to advance the conceptual understanding of the role ecosystem services play in repatriation, resettlement, and peacebuilding processes, and provides an operational framework for the application of concepts in future research in conflict settings.

2. Methodology

2.1. Conceptual framework

This research aims to operationalize the concepts of ecosystem services, livelihood, and repatriation of refugees, and to examine how they link to and support more extensive peacebuilding and reconstruction in a conflict-affected context. Figure 1 depicts the conceptual framework that underpins this broad aim. We constructed the conceptual framework based on an extensive and robust review of the literature. The development of a theoretically robust, relevant and easily understandable framework is needed to help achieve an integrated repatriation and peacebuilding approach. Although the aims and objective of this research are somewhat different, the concept and theme of the Millennium Ecosystem Assessment (2005) framework provides a useful starting point for our work. The Millennium Ecosystem Assessment (2005) links different ecosystem services to several components of human well-being. In addition, the Institutional Analysis and Development (IAD) framework (Sabatier & Ostrom, 2019) and the social-ecological systems (SES) framework (Ostrom, 2007) were useful in conceptualizing our framework. IAD framework provides guidance for key insights on institutional and participatory aspects of refugee
repatriation, and the evaluation of resulting effects. The IAD schema includes context, action arena, patterns of interaction, evaluative criteria, and recommendation with prominent attention to the actors (Nigussie et al., 2018). In this research, the actors are the Rohingya refugees directly participated in the analysis and the pattern of interaction is the repatriation process. Although it is difficult to integrate evaluative criteria into this research as the repatriation is at the planning stage and has not been implemented, it is useful in assessing post-conflict expectations. Similarly, SES framework provides a list of variables useful in diagnosing the sustainability of socio-ecological system (Poteete et al., 2010). The first tier of the framework includes resource system, resource unit, governance system, and actors (Leslie et al., 2015; Partelow, 2018). This framework was useful in cross-checking the variable selection especially the resource system, interaction, and governance system. Given the absence of existing data on the ecosystem services in the study area, it was not possible to integrate the resource unit dimension.

Fig 1: The conceptual framework of conflict, ecosystem services, and human well-being. The uppermost block (cascade model) was used to empirically examine the relationships. The second block summarizes the interlink between conflict and ecosystem services. The final block provides a foundation for the integration of
ecosystem-services in post-conflict reconstruction.

This work is designed around six operational challenges of repatriation, resettlement, reconstruction, and well-being, listed below:

- The role of **pre-existing** resource scarcity, limited access to ecosystem services, livelihood challenges and statelessness in voluntary repatriation.
- The contribution of violence, resource scarcity, limited access to ecosystem services, loss of property, livelihood challenges experienced during **the conflict** in voluntary repatriation.
- Fear of violence, livelihood challenges, statelessness, and access to ecosystem services during **post-conflict** in voluntary repatriation.
- The contribution of **conflict** in changes to ecosystem services.
- The potential influence of changes in ecosystem services on **conflict** recurrence.
- The relevance of ecosystem services and property reinstitution in **post-conflict** reconstruction.

We explored how these challenges are linked and what are the implications of the interaction between them. Although some of the challenges overlap with each other, they are structured so as to help identify and communicate the way in which the concepts interact in different periods of conflict and to facilitate data collection and analysis. At the first step of model development, we used a cascade model to capture different problem areas related to conflict, refugees and repatriation. We then bring together the concepts of ecosystem services, post-conflict reconstruction and well-being into a comprehensive framework. Ultimately, the aim of this work is to examine how the concepts of violence, statelessness, livelihood and ecosystem services could be used operationally to encourage voluntary repatriation, facilitate resettlement, contribute to post-conflict reconstruction, promote peacebuilding and prevent conflict recurrence. The successful implementation of this framework will in-turn promote more effective and inclusive ecosystem governance in conflict-affected settings. To ensure the usability of our conceptual framework, it is applied to a specific context. We applied a participatory approach and tested the validity of the framework in the case of Rohingya refugees in Bangladesh.

We argue that in order to explore the empirical linkage among armed conflicts, ecosystem services and livelihood in a post-conflict setting, a clear understanding of the perception of well-being before, during and after the conflict is imperative. Consequently, these factors determine an individual's decision towards repatriation and provide crucial information for post-conflict reconstruction. Hence, we empirically examine the cascade model of the conceptual framework. To investigate these relationships and gain a realistic understanding of Rohingya refugees’ intention to return to Myanmar, a quantitative household survey was conducted in 34 refugee camps in Bangladesh during April-July 2020. We first obtained permission to conduct research and use research instrument from the managers of the camp. The data collection team consisted of three

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1 This study was conducted under Harvard University’s committee on the use of human subject’s International Review Board Protocol No. IRB20-1879.
Rohingya refugees currently residing in the camp. The enumerators were recruited based on four criteria, currently residing in the camp, being fluent in Rohingya language, proficient in English and have experience conducting survey interviews. Since only Rohingyas themselves have access to the subjects, and the refugees are confident and comfortable sharing information only with each other, this is the only available option of data collection at this setting. Travelling to the field at this moment is not possible due to travel restrictions and there are no third-party enumerators available and suitable for this research. We minimize the amount of incentives for the enumerators to 100$ each for the entire research for their phone bills to avoid the risk of coercion. As the participation is completely voluntary, we do not provide any financial incentives to the participants.

The enumerators were trained through three Zoom meetings to familiarize them about the research objective, process and instruments. There were also weekly follow up meetings to ensure the integrity of the data collection process. The research instrument (can be found in supplementary information) only included closed ended (yes/no) questions to ease the interview process. They were also trained for research ethics, privacy consideration and data protection. They conducted self-administered telephone interviews because face-to-face interviews were not possible due to social-distancing rules during the global Covid-19 pandemic. The enrollment criteria include adults (above 18 years old) arrived in Bangladesh after August 2017. To maintain the privacy and confidentiality of study participants, we use participant code/ID instead of names in interviews and no identifiable information are gathered. The interviewers administered the interviews in local language based on the questionnaires and recorded the responses. The participants were provided with following information before the start of the interview:

- What can the participant expect during the study, and what does their participation entail?
- What are the reasonably foreseeable risks?
- What are the expected benefits that the participant may receive through taking part in the study?
- What are the rights of confidentiality and privacy?
- Who should the participant contact if they have any concerns or questions?

This effort resulted in a total of 1474 interviews with Rohingya refugees. We used stratified simple random sampling technique. Based on the Xchange (2018)’s report, the targeted population was estimated to be 317706 adults arrived in Bangladesh after August 2017. The sample is representative of the refugee population both by strata and at the overall population level. The survey design was based on the cascade model (the uppermost level) of the conceptual framework (see Fig.1 and Table 1). The questionnaire and consent forms are attached in the supplementary material.

2.1.1. Variables and Indicator Selection
In the selection of variables and indicators to measure the cascade model, we primarily relied on an extensive review of literature. We also referred to various guidelines produced by international organizations, particularly UNEP and UNHCR. Most importantly, the variables and indicators were reviewed and validated by the local practitioners. We solicited the opinions of two experts from the UNHCR offices in Malaysia and Bangladesh in the selection of variables and indicators to ensure that the indices reflect local contextual reality. This validation allows us to incorporate practitioners' local knowledge, experience, and expertise. We conducted several virtual meetings with the practitioners during the indicator selection phase and after the final results, given the travel restriction during the pandemic. We modified several variables based on the practitioners' suggestions, and the final selection of variables reflects the variables with a high level of agreement. See Table 1 of supplementary material for the summary of domain, variables and indicators selected for the analysis. While we acknowledge that the factors across the different operational challenges may be interrelated, for the purpose of simplicity and interpretability, each variable is discussed separately below:

2.1.2. Voluntary repatriation

The main variable in this study, voluntary repatriation is measured through four-dimensions, plan to return, awareness of repatriation, returning to the original place of residence and third-country resettlement. Instead of using single direct measurement of intention to return, we used aggregate measure of four-dimensions because it is difficult to capture if their return decision is truly voluntary from a single measurement. Returning voluntarily can be assessed by situations such as their knowledge about the repatriation process, plan to resettle in a third country and to have family members in the country of origin. Uncertainty about the repatriation procedures and conditions they may face upon their return might discourage them from returning, and their return decision might not be truly voluntary. Similarly, third-country resettlement opportunities might provide them with better hope for the future than returning to where they belong (Human Rights Watch, 2018a). It is reported that refugees with family remaining in the home country are three times more likely to return voluntarily (Brynen & El-Rifai, 2007; Harpviken, 2014; UNHCR, 2004, 2014a, 2018b; Xchange, 2018).

2.1.3. Pre-existing conditions before the conflict (Pull-Factors)

Several reports from the international organizations confirmed that the plight of Rohingya refugees pre-dated the recent conflict (François et al., 2018; Jones, 2017; Long, 2013; Mohajan, 2019; Tanenbaum, 2017; UNHCR, 2019a) Several factors existed before the conflict can influence whether or not they wish to return to their country of origin (Ghosn et al., 2019). Thus, these conditions are referred to as pull-factors in our analysis. First, their consideration of returning is likely to be affected by demographic characteristics (UNHCR, 2018c). Given vulnerability to violence, women, children, and older adults might be more reluctant to return to their origin after being displaced. By contrast, individuals with a higher education level or having gainful employment in their hometown before conflict escalates might expect to return home (UNHCR, 2014a). Next, their perceptions of the cause of conflict can be one of the critical determining factors. This perception can often be determined by their pre-conflict traumatic experiences (Lie, 2004). We measure this through three variables, religious/racial intolerance, resource scarcity and
poverty. It is recognized that the lack of citizenship and statelessness are some of the root causes of the Rohingya conflicts (The Foundation for European Reform, 2018). Since 1982, the majority of Rohingyas have been deprived of nationality and citizenship (Institute on Statelessness and Inclusion, 2018). Without the government’s recognition of the legitimacy of Rohingyas to have citizenship, it is unlikely that other rights and needs can be restored (The Foundation for European Reform, 2018). This issue will undoubtedly hamper their eagerness to repatriate (Milton et al., 2017).

Another critical factor in refugee’s return decision-making is ownership of housing, land and property (HLP) before the conflict. Ample evidence suggests that shelter in the country of origin is a key variable in the return decisions of displaced people (AREU, 2006; Omata, 2013; Walsh, 1999). Similarly, the process of land and other property in their homeland is one of the main decisive factors for refugee’s choice to return (Norwegian Refugee Council, 2017; Xchange, 2018). Besides, the possession of documents attesting ownership of HLP is equally as important (Norwegian Refugee Council, 2017; Unruh, 2016). The situation of livelihood and essential services, such as health care, food, water, firewood is also crucial for their intention to return (UNHCR, 2018b). The ability to make a living prior to conflict might also be attributed to this decision (Ghosn et al., 2019). The pursuit of education is often given high priority in the process of return decision-making by refugees (Al-Ali, 2002; Bascom, 2005). In the repatriation survey conducted by Xchange (2018), a large number of Rohingya refugees demanded the rights to receive education and employment.

2.1.4. Conflict-related factors (Pull-Factors)

As mentioned above, most Rohingya refugees forced to flee their homes due to violence, persecution and brutal military crackdown (International Crisis Group, 2019). Thus, their exposure to violence and experience during the conflict can be main determinants for their decision to return (Ghosn et al., 2019; Omata, 2013). The vast majority of the refugees around the world demonstrated that security and safety in their home countries are the most important factors influencing their decision on returning (UNHCR, 2014a, 2018c; Xchange, 2018). Therefore, the key variables we considered here are experiencing physical torture, mental torture, loss of family members and arrest during the conflict. It can be expected that refugees directly exposed to these traumas during the conflict are less likely to return. Next, loss of HLP, access to HLP and loss of HLP documents are vital issues for forcibly displaced people (NRC, 2016; UNHCR, 2018d). HLP is often weaponized during the conflicts by damaging housing and properties, confiscating lands and deliberately destroying HLP records (Unruh, 2016). Most of the Rohingya's entire villages were razed to the ground during the conflict (Selth, 2018). There was also evidence of the burning of houses and shops, land grabbing and forcible displacements (Milton et al., 2017). UNHCR (2019)'s independent fact-finding mission confirmed that several acres of Rohingya-owned cultivated land were deprived during the government’s “clearance operation” in 2017. According to the satellite imagery analysis, more than 90% of Rohingya settlements were destroyed during the same period (UNHCR, 2019a).
The next crucial factors in repatriation decision-making are livelihood options and basic need conditions (UNHCR, 2004). Apart from the fear of re-exposure to direct violence, refugees who experienced the deterioration of livelihood during the conflict can deter their decision to return due to uncertainty and anxiety (Schiltz et al., 2019). Variables included measuring this factor are, access to food, drinking water, fuelwood, shelter and income. These variables are intrinsically linked with ecosystem services. Armed conflicts can have devastating impacts on the ecosystem services due to weapons deployment, destruction of crops, arable land and biodiversity, and increased human mobility (Machlis & Hanson, 2011).

Moreover, fear of persecution and violence prevent civilians from obtaining access to ecosystem services for survival. As in pre-conflict factor, we also included access to health care and education. Losing access to these services can render their consideration to return even if they have had opportunities to access the services before the conflict.

2.1.5. Post-conflict experience and perception (Pull-Factors)

The third factor in our analysis deals with how refugee’s experience after the conflict and their perceptions about the situations in the home country influence intention to return. These factors overlap, naturally, with a priori characteristics before fleeing. These perceptions are driven in the aggregate by physical torture, conflict recurrence, lack of the rule of law and natural disasters. UNHCR (2019) have substantiated that the conditions in Rakhine state do not allow safe and dignified repatriation of Rohingyas. Likewise, their perceptions toward livelihood and living condition after returning are also decisive factors. This factor includes a lack of adequate food supply, clean water, fuelwood and, access to HLP (UNHCR, 2014a).

Likewise, HLP is one of the most pressing issues in post-conflict (Naseh et al., 2018; OCHA, 2007). Rohingyas face numerous and complicated challenges relating to their HLP due to absence of tenure, documentation, extensive property damages and secondary occupation (Dussich, 2018; The Foundation for European Reform, 2018). The experience from repatriation process for Afghan, Angolan, South Sudan, Iraqi and Bosnian refugees witness that for refugees, the ability to reclaim their land and access to livelihood assets appear to have a substantial influence on their return decision (Harild, Niels, Christian, Asger, Zetter, 2015; Heimerl, 2005; UNHCR, 2018b). Rohingya repatriation survey also found that one of the primary concerns of the refugees’ is the reinstitution of their HLP (Xchange, 2018). As in conflict category, these livelihood conditions are inevitably associated with ecosystem services and natural capital. One of the main reasons for returning can be the abundance of natural resources and ecosystem services for forest and marine resources-dependent communities (United Nations Environment Programme, 2009b). Furthermore, the physical environment in conflict-affected regions is often unfit for human habitation and vulnerable to natural hazards (Amstislavski, 2002; Harild, Niels, Christian, Asger, Zetter, 2015; United Nations Environment Programme (UNEP), 2010). Another critical factor, particularly for the Rohingya refugees, is freedom of movement associated with statelessness (International Crisis Group, 2019; Kingston, 2017). During the repatriation attempt in 2018, Rohingya's have demanded to lift the restriction on freedom of movement, recognition of their
official status, restoration of citizenship rights and the rights to maintain their religious and cultural identity (Human Rights Watch, 2000; International Crisis Group, 2019; Kapur, 2018). Furthermore, access to essential services, such as health services and formal education after retuning is also a significant variable (Ahsan Khan, 2017; Bradley, 2011; Thuzar, 2019; UNHCR, 1993).

2.1.6. Host country situation (Push factors)

In addition to factors related to the home country characteristics, we believe that host country factors (push factors) or the current situation in the host country have a strong influence on the possibility of returning to the country of origin (Ghosn et al., 2019). This factor includes safety conditions in the camps, access to basic needs and the ability to make a living, and access to education and health care. Bangladesh is highly vulnerable to climate change and sea level rise (Rakib et al., 2019). In general, the perception of safety and security, and better livelihood conditions are a strong motive for refugees to remain, at least temporarily in host countries (UNHCR, 2018b). Despite facing denial of fundamental rights, limited freedom of movement beyond temporary camps, pervasive poverty and tension with local Bangladeshis, most of the Rohingyas feel safer in Bangladesh as they seek sanctuary in camps (Atlantic Council, 2019; IDC, 2020). Humanitarian aids provided by international organizations also play a huge role in their perception of safety and welfare (OECD, 2019). Although humanitarian organizations are providing vital services such as shelter, food and healthcare, long-term problems like formal education and employment persist (Wake & Barbelet, 2019). As returning to Myanmar is still a priority for many of the Rohingya refugees (Habib et al., 2018; Wake & Barbelet, 2019), each of these variables is likely to play a critical role in return decision.

2.2. Statistical Analysis

The data were analyzed using hierarchical multiple linear regression analysis. Multiple linear regression is a powerful data-analytic strategy that allows to explain or predict a criterion (dependent variable) with a set of the predictor (independent variables) of interest (Petrocelli et al., 2003). Hierarchical regression is typically suitable for examining specific theoretically based hypothesis (Cohen, 2008). This technique is employed to test the theoretical model and the relative importance of predictor variables. To investigate the factors determining Rohingya refugees’ willingness to return to Myanmar, we used “voluntary repatriation” with four measurement items as the dependent variable. The independent variables are 1. Fear of violence, 2. Access to ecosystem services, 3. Statelessness, 4. Housing, Land and Property (HLP), 5. Livelihood, and 6. Host-country situation. To differentiate between positive and negative indicators, HLP was divided into two variables, ownership of HLP and loss of HLP. Each variable includes up to nine measurements (see table 1). Furthermore, we added a number of control variables, such as gender, age and marital status, to the regression model. Cross-tabulation analysis and data visualization were conducted using Tableau software.
3. Results

The largest demographic group of respondents are a married male between 35-44 years old, followed by married males between 45-54 years old. 18-24 years age group is the smallest respondent group for both married and unmarried female (Fig 2). Fig 3 summarizes the distribution of respondents based on their origins and camps. See Table 1 and of supplementary material for descriptive statistics of the variables and the correlation matrix.

Fig 2: Sociodemographic characteristics of the respondents (n = 1490)
Table 4 reports the results of the regression model with “voluntary repatriation” as the dependent variable. In model 1, we included only the control variables, gender, age, marital status and education level to predict the dependent variable. This model predicts how these pre-existing demographic conditions influence refugees’ willingness to return to Myanmar. The results show that the coefficient of all the control variables to explain “voluntary repatriation” are positive and statistically significant ($R^2 = 66.0\%$). Without the influence of other factors, gender makes the strongest contribution in explaining the outcomes ($\beta = 0.795, p = 0.000$). As shown in figure 4, the female representation of willingness to return is substantially smaller than male. This result is the opposite of what researchers found in the study conducted for Somali refugees in Dadaab refugee camps. 58.1% of the female refugees reported intending to return to Somalia (UNHCR, 2014b). This can be because the household participated in their survey were female-headed households, whereas we did not differentiate between female or male-headed household in our study. The level of education is also statistically significant ($\beta = 0.041, p = 0.012$) followed by age ($\beta = 0.012, p = 0.007$) marital status ($\beta = 0.021, p = 0.075$). Among those who do not intend to return, there is a high percentage of refugees in the working-age population, between 25 to 55 years. People with primary education level or above represent a higher number among those who
do not want to return. Married men are more likely to return than those not married. This can be
due to opportunities, and employment possibilities may be higher in Bangladesh and have a
greater chance of earning a living than in Myanmar.

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Table 3: Hierarchical Multiple Linear Regression results
a. Dependent Variable: voluntary repatriation

Note: *5p<0.05; **5p<0.01; ***5p<0.001
In model 2, we added key predictor variables. All the variables are statistically significant (Fig. 5). The regression model fits the observed variables well with the $R^2$ values of 67.3%. The $\beta$ value of all the predictor variables is at the lower end except for “gender ($\beta = 0.781$)”. This can be due to limited variations in the binary dataset we used for the study. However, as we do not have a multicollinearity problem in our data, no further actions were required. Other control
variables, age, marital status and education level remain significant in model 2. Our first predictor variable, "fear of violence" is statistically significant, with p-value 0.000 and $\beta = -0.075$. The negative result indicates that the more the refugees are afraid of violence, the less likely they will voluntarily repatriate to the home country. This result is not surprising as the principal cause of the Rohingya refugee crisis is violence, persecution and abuse (Human Rights Watch, 2020). Xchange (2018) also reported that 97.77% of respondents feared returning to Myanmar with more than 43% fear experiencing genocide, 41% killing and 35% rape. Fig 1 of supplementary material presents intent to return based on fear of violence in our survey. More than 54.42% (800 out of 1470) respondents with fear of violence are not intended to return. This result is consistent with Somali, Syrian and Afghan refugees (Ghosn et al., 2019; Harpviken, 2014; UNHCR, 2014b, 2018b).

Fig 5: Hierarchical Multiple Linear Regression Model
The second variable, “access to ecosystem services” is also statistically significant with $\beta = -0.172$ and p-value 0.000. Based on the context of refugees, we only included provisioning, regulating, and supporting services and excluded cultural services. Unexpectedly, standardized regression coefficients ($\beta$) value of this variable is higher than that of “fear of violence”. This result suggests that the influence of predictor variable, "access to ecosystem services" on the criterion variable, "voluntary repatriation" is more substantial than "fear of violence". This factor might be explained by the extreme dependency of the populations’ livelihood on the ecosystem services for their survival before, during and after the conflict. Rohingyas are recognized as the most impoverished ethnic minorities in Myanmar (78% of households living below the poverty line of $1.25/day) (The Foundation for European Reform, 2018). Chronic poverty, high level of food insecurity and malnutrition, combined with a lack of livelihood opportunities, become one of the biggest concern for the refugees. In a state where the primary sources of livelihood are agriculture and fishing, the survival of Rohingyas is exceptionally challenging due to restricted access to ecosystem services such as land, forest and marine resources. Another reason can be due to refugees’ expectations from UNHCR and other humanitarian organizations to ensure adequate protection and prevent further abuse after repatriation (Human Rights Watch, 2020). However, they lack confidence in protecting their rights to earn livelihood or access to normally available ecosystem services upon returning (Huang & Gough, 2019). This situation might have led to this variable being statistically more substantial than the well-founded fear of persecution. Fig 2 of supplementary material presents intent to return based on access to ecosystem services. More than 50-60% of the respondents do not intend to return if they do not have access to ecosystem service before-, during- and post-conflict. This result means that they expect to have adequate food, access to clean water, fuelwood and HLP restored upon return.

Another vital variable of interest, "statelessness" is also statistically significant (p-value 0.041) with $\beta$ value of -0.086. This reflects that refugees who experience “statelessness” are less likely to return. Fig 3 of supplementary material also shows that up to 70% of the respondents who will not return described “statelessness” as a concern. Myanmar’s Citizenship Act formally denied the citizenship rights of Rohingya and are classified as illegal immigrants, thereafter, rendering them stateless without any form of identification (Dussich, 2018; Milton et al., 2017). As a result, they become disproportionately vulnerable to persecution, violence and denial of fundamental rights (Jones, 2017). Interestingly, in our study, this variable is as significant as “livelihood” and more significant than “access to ecosystem services” and “host country situation”. This can be explained by the fact that, as necessary as it is, statelessness is not the primary driver of conflict and more of a symptom of other underlying conflict factors (Ware & Laoutides, 2019).

For the ownership of HLP, the variable is statistically significant (p-value 0.007) with $\beta = 0.041$. Conversely, loss of HLP has the $\beta$ value of -0.036 (p-value 0.065). These results indicate that refugees’ willingness to return is higher when the ownership of HLP is higher, whereas the willingness to return is lower when the loss of HLP is higher. Additionally, 865 out of 1470 respondents say they will not repatriate if their HLP will not be restituted (See Fig 4 of supplementary material). In many cases, millions of refugees and IDPs desperately want to return to their original homes and restore their lands for livelihood. The majority of the respondents will not
return if they lost their HLPs and documents. Notably, there is only a small increase in the number of people with the intention to return when they own HLP and documents before the conflict. This can be due to refugees’ lack of confidence in appropriate restitution of their HLPs after return, and that they will have inhabitable housing and access to livelihood. These findings are in accordance with what researchers found in Syria (UNHCR, 2018b; Unruh, 2016), Somalia (UNHCR, 2014a), Sierra Leone (United Nations Environment Programme (UNEP), 2010), Afghanistan, Congo, Iraq and Palestine.

Corresponding to the result of “HLP” and “access to ecosystem services”, “livelihood” is also statistically significant with (p-value 0.020) and $\beta = 0.080$. The contribution of this variable to the outcome variable is more significant than that of "HLP" and "fear of violence". This result elucidates the importance of access to "livelihood" as a determining factor influencing the decision on return. Fig 5 of supplementary material summarizes the distribution of respondents based on return decision and access to livelihood. These outcomes are anticipated as the Rohingyas face server limited access to health facilities and education services over the years, and the recent conflict has exacerbated their deprivation (Haar et al., 2019). The shortage of livelihood opportunities is a common factor deterring refugees from returning to their home countries in many previous studies (Glazebrook, 2004; Hardgrove, 2009; Schiltz et al., 2019; UNHCR, 2018b).

Our last variable, “host country situation” is statistically significant with (p-value 0.056) and $\beta = 0.138$. “Host country situation” contributed most to the outcome variable after “access to ecosystem services”. This result demonstrates that the safety and living condition in Bangladesh is the second most important factor influencing Rohingya refugees' return decision. As the refugees consider the situation after returning to be extremely uncertain and unpredictable (Schiltz et al., 2019), the current situation in the host country becomes a critical, decisive factor for repatriation. Remarkably, the proportion of refugees who do not intend to return is still high even when they do not have adequate access to health care, ecosystem services and livelihood opportunities, and endure natural disasters in the host country (See Fig 6 of supplementary material). It is also important to note that the absence of persecution in Bangladesh is a fundamental “push-factor” for their intention to return. Given the security concerns and dreadful living condition on the ground in Myanmar, this result is not surprising.

4. Discussion

In this research, based on the development of a conceptual framework and survey data, we used statistical methods to derive detailed voluntary repatriation determinants and return decision pattern of Rohingya refugees in Bangladesh. All the predictor variables of interest are statistically significant and supported. In any circumstances, regardless of ongoing negotiation between the government of Myanmar, Bangladesh and UNHCR, the majority of the refugees do not intend to return home. Based on our results, the primary reasons are lack of access to ecosystem services, host-country situation, livelihood concerns, fear of violence and restitution of HLP, and host country situation. For ecosystem services in particular, their current status warrants some mention. While no systematic assessment has been done, Amnesty International (2017) has used
satellite images, photographs, videos and interviews with Rohingya to examine areas where dislocation has occurred. They have found that in addition to the collapse of services due to the way dislocation originally occurred—burned villages, fields, pastures; destroyed water wells and health services—there is an ongoing effort to reshape Rakhine through bulldozing, building, clearing of trees and other vegetation in an apparent attempt at repopulation of the area by people other than the Rohingya. Thus in addition to the very low status of ecosystem services due to the destruction brought on by the methods of forced dislocation, there is the prospect of significant in-access to ecosystem services under construction in areas of origin for the Rohingya population. These findings indicate the significance of including well-being and livelihood conditions in addition to security concerns in repatriation planning. The results also highlight the necessity of considering pre-, during- and post-conflict situations in refugee studies to be able to grasp the complexity and uncertainty associated with displacement resulting from armed conflicts and political turmoil. Even in the best scenario in which the security situation at home improves, day-to-day survival and livelihood of people remain a great challenge for the post-conflict resettlement. This phenomenon is particularly relevant to Rohingyas because they have been subjected to persecution and impoverishment long before the recent conflict (The Foundation for European Reform, 2018). Despite the complexity and multifaceted nature of Rohingya conflict, like in many conflict-affected countries, factors such as political oppression, resource scarcity, poverty, unemployment and economic stagnation are undoubtedly responsible for the likelihood of conflict recurrence (Panic, 2005). The security dimension is of critical importance. Nevertheless, this cannot be considered independently of livelihood factors for the reason that there is a strong interaction between the two.

Although the protection of Rohingyas from further abuse and violence is fundamental in repatriation, it is exceptionally imperative to integrate economic, social and environmental factors as a unified strategy to achieve sustainable repatriation and prevent conflict relapse. First and foremost, their security and rights must be protected, accountability ensured, and their villages, homes and properties are restituted upon return (International Crisis Group, 2018). The international community has considerable experience in providing forms of security and rights protection for returning refugee populations (e.g., IOM, 2008; Das and van Houtte, 2008; van Houtte et al 2008). The legal, technical, logistical foundations for such protections are well established and include forms of mass claims restitution, compensation, alternative lands; the establishment of internationally monitored returns, court proceedings, recognition of customary forms of claim, etc. Failure to safeguard the core components of voluntary repatriation, physical safety, legal safety, material safety and reconciliation (UNHCR, 2004), can result in the creation of new sources of conflicts and repeat migration. Schwartz (2019)’s research on Burundi civil war and migration showed how refugee repatriation could incite violence in the home country and lead to fleeing again. Similar situations were observed for Rwandan, Syrian, Iraqi and Salvadorans refugees (Kingston, 2017).

Given the mass destruction of lives and disastrous impacts of conflicts on livelihoods, durable repatriation and reconstruction necessitate a holistic approach of rebuilding shattered livelihood, social cohesion and trust (Sakalasuriya et al., 2016). In this context, equitable access to ecosystem service and natural resources become necessary for ensuring adequate food, shelter,
water, sanitation and hygiene. In the context of Rohingya refugees, addressing the issue of statelessness is a priority for non-discriminatory access to livelihood, education and health facilities, and preventing the violation of economic and social rights. Limited access to ecosystem services in conflict-affected areas will jeopardize livelihood reconstruction. Moreover, the repatriation process can have devastating impacts on the environment and natural resources due to rapid arrival and resettlement of the displaced population compounded by poor resource planning and logistical decisions (Amstislavski, 2002). This environmental risks, in turn, threaten people's health, livelihood, security and well-being. Therefore, addressing ecosystem services and resource management mechanisms are necessary components for post-conflict reconstruction (See Fig.1).

Moreover, regardless of our empirical findings, the restoration of HLP also must be prioritized. Without adequate, consistent and coordinated systems to ensure HLP restitution, repatriation is merely impossible for many refugees (Thiele, 2000). Despite the notable degree of consensus on the importance of this issue among the international community, Myanmar lacks systematic restitution policy, especially for conflict-affected communities (Oliver, 2019).

5. Conclusion

This study identified the conditions that influence the decisions by Rohingya refugees in protracted displacement regarding return to Myanmar – when, why, and how are decisions on return or other coping strategies made, and how these decisions are affected life in exile and the situations in Myanmar before-, during- and post-conflict. The most important conclusion to emerge from the preceding analysis is that the successful return and resettlement of Rohingya refugees is much more complicated than usually perceived. It has now become apparent that along with well-founded fear of persecution, livelihood and well-being related issues, and host-country push-factors play a decisive and principal role in the intent to return and sustainability of reconstruction. Among other challenges, the depiction of access to ecosystem services, HLP and well-being challenges provided the grounds for asserting the paramount importance of ecosystem services and natural capital as a core entity and cross-cutting element of sustainable repatriation and post-conflict reconstruction process. In terms of livelihood, food security, physical, legal and human rights protection of retunes, integrating ecosystem services, environment and natural resource management into resettlement process is no longer an option (Harild, Niels, Christian, Asger, Zetter, 2015).

Despite protestations of commitment to protecting upon repatriation, Rohingyas lack confidence in the whole process of repatriation and life after the return. In this regard, the repatriation process may either facilitate or endanger the reconstruction process and undermine peace-building. The findings from this study should inform all the parties involved in the repatriation planning about the determinants for intention to return to formulate operational approaches that are responsive to the circumstances of the refugees and contribute to sustainable return and reconstruction. All the actors, humanitarian organizations, the government of Myanmar and
Bangladesh, need to take into consideration the livelihood, social and economics dimensions of displacement and return, as well as the concerns and coping strategies upon return.

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