**Overview**

Welcome to the third in our series of quarterly newsletters for the Sajag-Nepal project. The purpose of these newsletters is to summarise the breadth and depth of research across the project, highlight outcomes and outputs that we want to share more widely, and draw attention to upcoming activities or milestones.

Over the last few months the team has been settling into the project. Induction for the RAs continued over the Northern Hemisphere summer, and the Social Science Baha team in particular have been preparing for their initial field visits which began after the Dashain holiday. This has involved a massive effort by a number of people, and I want to thank Katie, Amy and Nick in particular for helping to ensure that ethical considerations and risk assessments were in place and approved before field work began. The RAs, together with Sumitra from BBC Media, have also been working on the first translation of the Disaster Studies Manifesto into Nepali, and it will be fantastic to be able to disseminate that more widely through Sajag-Nepal. I am also delighted to say that Bina Limbu has started her PhD work at Northumbria, working with Katie on issues around exposure and vulnerability. Bina has a great deal of research experience in Nepal so it’s great to welcome her to the team.

The 2021 monsoon ended officially last month, although we heard last week about some ongoing and persistent rainfall. There have been some locally destructive impacts this year, not just in Helambhu and Melamchi (where much of the attention was initially focused) but across much of the country. Several reviews of the monsoon impact are already underway, notably by the Ministry of Home Affairs and the NDRRMA. As a project team we are in a great position to complement these efforts, both because of our contacts with a range of organisations and because of the expertise and information that we’ve got as a group. Nick and Sarmila have started to compile impacts from the 2020 and 2021 monsoons, and I expect that there will be opportunities for many of us to contribute to this review as it takes shape. Prem and Ragindra are coordinating with the NDRRMA on their review, and we should be able to feed into and support this as well. Tom, Alex Densmore, Alex Dunant, and Sweata are working with Prem to organise a series of workshops with the HCT clusters, both to reflect on their experiences during the monsoon and their engagement with the monsoon preparedness plans, and also to think about how Sajag-Nepal can provide support to the clusters in preparation for the next monsoon.

The work package leads have spent some time recently thinking about the progress of different parts of the work, and how our goals have evolved due to external forces and opportunities. As part of this, Sarah Beaven led a very useful discussion about mapping the different parts of the project in terms of the balance between what we might call ‘conventional’ research (done by us as research organisations) and ‘applied’ research (done in close collaboration with external partners). That balance will evolve over the duration of the project, and we are thinking through how to visualise that evolution. Once those ideas have firmed up then we will bring them to the whole project team for consideration.

Finally, we now have a mockup of the Sajag-Nepal project website, as well as a plan for getting it set up on the Durham platform. I’ll be in touch when this is ready to go.

I hope colleagues in Nepal have a restful and enjoyable break over the Tihar holidays.

Alex Densmore

**\*\*SPOTLIGHT\*\***

Arishma Gadtaula joins the Sajag Nepal project as a researcher at NSET. Arishma brings to the project experience in geology, GIS and engineering geology, having worked on a range of projects since graduating from Tribhuvan University. Arishma is currently working on collating a database of landslide inventories for Nepal as a means of assessing gaps in knowledge that we are hoping to fill in Sajag-Nepal.

As part of our ‘spotlight on research’ Arishma took part in our quick quiz, so please read on to find out more!

**Q1. Tell us a little bit about you and your background**

I am an engineering geologist interested in learning geological processes and their interaction to human life. My Master’s thesis research focused on landslide distribution in Haku area of Rasuwa district, Nepal and different factors including dimensional and technical attributes that made the area susceptible to landslides. I completed my Master’s degree from Tri-Chandra Multiple Campus, Tribhuvan University in November, 2018. I then worked as an Assistant Lecturer for Thapathali Engineering Campus (2018-2020) and I also got involved with Hirosaki University from Japan for the evaluation of the co-seismic landslides developed post-2015 earthquake. I also worked as a technical person for the Project Development Team at Bhoketkoshi Gaupalika, Sindhupalchowk district representing OXFAM Nepal (2019).

**Q2. What drew you into your research area?**

During my graduate days, I was always keen to learn about various geological processes, specifically disasters and their relationship with human life. I was academically always curious about this topic and wanted to explore platform where I could learn more about the background and analysis of such geo-disasters. Especially after completing my B.Sc. in Geology, I had just completed my B.Sc. and the Gorkha earthquake 2015 hit Nepal which was a turning point for inspiring me to study Engineering Geology for my Master’s degree. I had many questions in my mind and started to develop interest on geo-disaster studies. The Gorkha earthquake simultaneously created a stir in lives of people. My ancestral house was also severely damaged. Post-earthquake disaster many more landslides were triggered in June- June, 2015. I started studying and analysing such co-seismic landslides via Google Earth images and such events garnered my attention frequently which drew my attention to the research on landslides. I also published a research paper on “Landslide susceptibility mapping using Weight of Evidence Method in Haku, Rasuwa District, Nepal” (2019). Back then when I worked as freelancer, I also got an opportunity to train government officials from Forest and Soil Conservation Nepal (2018) which helped me draw conclusions about government approach to such disasters. My mentor seeing my enthusiasm helped me participate in Landslide Training Program at Taiwan (2018) which helped me understand more about geo-hazards and use of modern techniques to further analyse such disasters which made my thoughts firm on my research interest.

**Q3. What part of the project are you looking forward to the most?**

As an engineering geologist, I am very excited to explore modern approaches in landslide studies apart from the primitive methods we have been using in the past in Nepal. I am also very keen to compare the landslide studies from other nations and compare them with the research that have taken place in Nepal in the past. I look forward for training and workshops on geo-disasters and their interrelationship with other disciplines of science. I feel it would be interesting to share experiences with the researchers of different fields and learn more about different sides of landslides or geo-disasters.

**Q4. What do you hope to have achieved by the end of the project?**

I would love to develop my skills as a researcher and explore more about the social aspects interlinked with the disasters. I wish to learn new methodologies and new technologies that have been used worldwide and could be beneficial for the studies in Nepal. I personally also would like to develop my communication skills, and knowledge on interdisciplinary science. I consider this project as an opportunity to help me explore other institutions and organizations that work for such research. I also wish to publish the findings or my contribution as a research paper during the project so I hope I will get help from my technical supervisors for continuing this wish.

**Q5. Tell us an interesting/surprising fact about yourself**

I am an introvert trying to explore my communication skills so don’t mistake me as uninterested.

**Updates from the Work Packages**

**Work Package 1**

The focus of the WP1 team this quarter has been on preparing for the first phase of fieldwork to the four case study palikas, and in building baseline datasets and workflows to underpin the landslide mapping work.

For the ethnographic fieldwork, Anuradha will be leading the work in Dolakha; Tek in Kavre; Sunil in Sindhupalchok; and Nyima in Myagdi. The team will be undertaking their fieldwork in pairs to support each other and to facilitate the comparative aspects of the research, with support from the case study leads and the wider work package team.

As we write this update, we are delighted to say that Nyima and Anuradha have safely arrived in Dolakha, and Tek and Mukta in Kavre. They will be there for two weeks as part of this initial scoping visit.  The aim of the trip is to get a sense of the landscape, the actors, institutions, and infrastructures present in the case study palikas, and will do the important work of introducing the Sajag-Nepal project to palika officials and community members, as well as formally requesting permission from the palika office to conduct fieldwork. After Tihar, the team will turn their attention to Sindhupalchok and Myagdi.

In preparation for fieldwork, and building on the induction programme which ran over the summer, Anuradha, Nyima, Tek and Sunil have worked together to develop a series of research tools including: a field inventory to document significant landscape features, sites of cultural and religious importance, infrastructure, institutions, and development projects; a calendar to document the different activities that take place throughout the year in the palikas; and an interview guide to explore recent experiences during the 2021/2078 monsoon, local knowledge and everyday practices, and preparation and response to monsoon-induced hazards. While carrying out the research, the team will be piloting the visual methods explored in detail over the summer, and will be trying out different Nepali terminologies to identify locally meaningful ways of speaking about project topics, such as DRR. To support the fieldwork, and as part of the ethical review process, the team has prepared informed consent forms, oral consent scripts, photographic consent forms, project information sheet, talking points, and the field inventory, DRR terminology test, annual calendar of activities, and thematic interview guide – an excellent effort from the team!

At NSET, Arishma has be working to collate an archive of landslide inventories for Nepal with a view to identifying where knowledge gaps in landslide mapping exist, and what we can learn from existing data. Ram has been working on formulating processing algorithms that manipulate the data generated by the automated mapping. Sarmila is collating archives of key multihazard events from the 2020 and 2021 monsoon, and pairing these with landslide susceptibility and weather data to identify key trends in triggering factors. Mark has been designing the workflow for the automated mapping, and has gained useful insights from the forest change mapping research community.

Amy has been leading the writing of a conceptual paper, which brings together members of the WP1 team, with the aim of setting out our approach for studying overlapping changes in the physical and socio-political environments in the context of Nepal’s mountain hazard chain. The paper builds on our earlier monthly reading group and has provided an excellent opportunity to deepen our interdisciplinary discussions.

**Work Package 2**

The WP2 team have been steadily collating and building the data required as inputs for the upcoming scenario models as well as generating a broader understanding of emergency response, contingency planning, and the role of science in decision making in Nepal. As a team, we met on 11 and 25 August to discuss both the existing Earthquake and Monsoon ERPPs and to begin planning a series of workshops with the UN clusters to reflect on the 2021 monsoon response actions and develop a better understanding of each clusters spatial and temporal data needs. We had another joint team meeting with WP3 on 4 October to continue these discussions and to start to map out the workshops.

Sweata has been particularly busy, starting a collection of previous reports and scientific studies on the Melamchi disaster to understand what science existed before the event, and what was and wasn’t used, and why. She’s also beginning to gather similar information on other areas and past events through informal talks with local government authorities to build a database focusing on the recent disaster including flood, landslide and the Lamjung earthquake. She started the important initial level coordination with the cluster and province focal persons on response and has begun compiling and maintaining a contact list of all the relevant organization/focal persons. Sweata has been working in close coordination with the UNRCO in preparation for the monsoon reflection sharing and has attended several meetings and sharing sessions organized by NDRRMA and clusters focused on the 2021 monsoon disaster.

Alex Dunant has begun gathering building data and population data from the previous DfID project and online resources and has approached Facebook to get access to mobility data to inform earthquake preparedness in Nepal. Importantly, he’s had a positive reply from the company which is keen to collaborate as part of the Facebook Data for Good initiative. An initial get-to-know meeting with the Facebook team happened in late September, and Omari Sefu from Facebook met with the work package leads in late October. This will be a potentially powerful dataset to complement or replace the Flowminder data. On the modelling front, Alex has been focused on developing the landslide component for the multi-temporal, multi-hazard scenarios. A national scale “slow-onset” co-seismic susceptibility model has been created to be used for multi-hazard risk assessment and a successful pilot test of the Flow-R capability to generate run-out for multiple source rasters has been completed. The data has been generated and sent to Pascal Horton in Switzerland to expand to national scale runout models that would feed in the dynamic multi-hazard model. Alex, Tom and Sihan (WP3) have begun discussing approaches to modelling long-term post-earthquake landside hazard and risk, and plan to meet and discuss on 5/6 Oct

WP2 also welcomed its newest and littlest team member in Lily Dunant Méheust, born on 31 August. Congratulations to Alex and the family on their newest arrival – we hope Lily has her Dad’s modelling skills so we can draft her in to help build our biggest scenario ensemble to date!

**Work Package 3**

We are working on blurring the boundaries between WP2 and 3, especially as initial discussions with the humanitarian clusters has indicated that it will be more useful to consider the whole hazard chain, as opposed to distinguishing between earthquake or monsoon triggers. Clearly the nature of the trigger is still important, and the RCO is still working with distinct earthquake and monsoon preparedness plans, but we want to explore where that boundary is useful to keep and where it may actually hinder preparedness. We are working toward a set of workshops with the humanitarian clusters to explore the existing plans and the key gaps, as well as their experiences in monsoon preparedness and response. The goal is to involve the clusters early in this process and tailor the research to those gaps, rather than approach them later on with a ‘product’.

Simon and Sihan are continuing to work on setting up the Hydro-JULES model to generate estimates of runoff, river flow, and soil moisture in response to precipitation. Sihan has also been thinking hard about how to incorporate seasonal forecasts into Hydro-JULES, starting with synthetic data and talking to the ARRCC project team about forecast availability. The plan is twofold – to be able to look back at past storms to better understand the impacts that have occurred (using both our own inventory data from WP1 and information collected by DHM and NDRRMA), and to start generating scenarios of possible future events that could be used as the basis for planning and discussion. Simon and Sihan will be visiting Durham in mid-November to work closely with Alex Dunant, Alex Densmore, Mark, and Nick on this.

We have also made contact with a part of the ARRCC project team that is focused on longer-term climate impacts, led by Rosie Oakes (Met Office). They are particularly concerned about projected changes to the monsoon over the next 30-50 years, and how those might affect hydropower facilities in particular. This is a really promising opportunity to combine the expertise on long-term forecasting in DHM and the Met Office with our project perspectives on the hazard and risk chain.

**Work Package 4**

We’ve temporarily paused work on WP4, which builds on the work from WP1-3. Elements of this work package will start to move forward later this year, in collaboration with the NDRRMA and IFRC.

**Research ethics**

The Sajag-Nepal project has undergone ethical review at Durham University and we have received approval to begin the research. A copy of the documentation (including a project risk assessment) will be made available via OneDrive for the team to access. As previously discussed, this is very much a live document and work package leads will be responsible for updating and resubmitting amendments as required, and as the research evolves. A big thank you to everyone who fed into this process. Any questions, please contact Katie: katie.oven@northumbria.ac.uk

**Social media**

Sajag-Nepal is active on Twitter (@SajagNepal) and our project website ([www.sajag-nepal.org](http://www.sajag-nepal.org)) is currently in development. We also feature on the recently relaunched Radix website ([Radix: Radical Interpretations of Disasters](https://www.radixonline.org/news-and-events)), as an example of a project with its own ethical guidelines which build on the principles of the [Disaster Studies Manifesto: Power, Prestige and Forgotten Values](https://www.radixonline.org/manifesto-accord).

Alex Dunant has started a project Slack platform and several team members are active on Slack – if you are interested in exploring this as a way to communicate across the project, please contact Alex directly (alexandre.dunant@dur.ac.uk).

We are trialling a move from Google Drive to OneDrive for general project materials and information. We have started this with materials for our monthly team meetings, and if there are no access issues then we will extend this to other documents as well. Please contact Rachel if you have any questions or concerns.

Project communication guidelines have been developed with input from the WP leads, with guidance for good practice and things to consider when communicating about the project. This is available on the project OneDrive and Google Drive. We will continue to update and refine this, so please send any suggestions to Rachel.

**Recent publications**

If you have recently published a paper or other output that is relevant to Sajag-Nepal, please send the details to Rachel and we will list them here for the team to see. Please include the DOI and a link to any open-access version, if possible.

Milledge, D.G., Bellugi, D.G., Watt, J., and Densmore, A.L. (2021) Automated determination of landslide locations after large trigger events: advantages and disadvantages compared to manual mapping. Natural Hazards and Earth System Sciences Discussions, doi:10.5194/nhess-2021-168.