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MASTER THESIS

**The Relationship Between Collective Action and Heterogeneity: Insights
from the Analysis of Institutions for Collective Action**

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Co-Supervisor: Armin Von Schiller

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Shreya Paudel

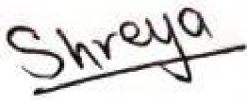
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GLODEP 2023

DECLARATION

I, Shreya Paudel, hereby declare that this thesis titled '**The Relationship Between Collective Action and Heterogeneity: Insights from the Analysis of Institutions for Collective Action**' is the outcome of my own efforts. I confirm that all the work in this thesis is mine, and the literary papers and secondary sources used during this research work have been duly cited, referenced, and acknowledged.

A handwritten signature in black ink that reads "Shreya" with a horizontal line underneath the name.

Shreya Paudel
Date: 22 May 2023

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Zásady pro vypracování

Globally, institutions for collective action (ICAs) have been instrumental in promoting participatory and community-based self-governance for addressing a common governance issue. Cooperative behaviour among human beings, and the role of institutions and norms in influencing them has also been a key concept of scholarly inquiry within social sciences. While the institutional design, and polity of self-governance within ICAs have been well recorded, the discourse surrounding the impact of heterogeneity of actors on the capacity, effectiveness, and resilience of the institutions is highly contested, and understudied. The qualitative study was guided by a classic literature review of the theoretical and empirical literature on collective action in different contexts. The study finds that few studies have explicitly looked at the role of socioeconomic heterogeneity in collective action situations, and others have measured the impacts through proxies like trust and social cohesion, both strands of studies show mixed results. The analysis of the study differentiates between situations where the heterogeneity is analysed with respect to the internal functioning of the group, and in conditions where the larger context within which the group is situated in is also taken into consideration. The analysis is substantiated within similar research in other context, where group-based collective action is analysed—from behaviour psychology, organisation behaviour studies, etc. The study confirms that there might have been some oversight in the conceptualization and measurement of the interaction of heterogeneity for two reasons. First, while heterogeneity is complex, dynamic, and multilayered, the theoretical conceptualization is rather simplistic. Second, impacts and interplays of heterogeneity might be visible over a longer period, which hasn't been the focus of studies on collective action. The study concludes with an agenda for future research (with the case of Nepal) on heterogeneity in collective action situations with a longitudinal macro-micro-macro-orientation, and an intersectional conceptualization of heterogeneity.

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The study was completed during my fourth months stay as a Research Intern within the Social Enterprises and Institutes for Collective Action research team at the Rotterdam School of Management, Erasmus University Rotterdam. I express my gratitude to everyone within the Department and the research team for the academic environment and support extended during my stay. This time with the research team allowed me to closely interact with scholars on social enterprises and citizen collectives and their research, which have shaped my interests beyond this thesis. I had the opportunity to attend the ‘From Science of Society: Evidence-Based Lessons for Social Enterprises’ symposium and multiple internal research seminars.

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ABSTRACT

Globally, institutions for collective action (ICAs) have been instrumental in promoting participatory and community-based self-governance. The institutions have especially been studied in contexts where people get organised for addressing a common governance issue. Cooperative behaviour among human beings, and the role of institutions and norms in influencing them has also been a key concept of scholarly inquiry within social sciences. The institutional design, and polity of self-governance within ICAs have been well recorded. However, the topic of how heterogeneity of actors impacts the functioning, capacity, effectiveness, and resilience of the institutions is highly contested, and understudied. This qualitative study is based on a classic literature review of theoretical and empirical literature on collective action in different contexts. The study finds that few studies have explicitly looked at the role of socio-cultural and economic heterogeneity in collective action situation, and others measure the impacts through proxies like trust and social cohesion. Both strands of studies show mixed results. The analysis of the study differentiates between situations where the heterogeneity is analysed with respect to the internal functioning of the group, and in conditions where the larger context within which the group is situated in is also taken into consideration. The analysis is substantiated within similar research in other context, where group-based collective action is analysed—from behaviour psychology, organisation behaviour studies, etc. The study confirms that there might have been some oversight in the conceptualization and measurement of the interaction of heterogeneity for two reasons. *First*, while heterogeneity is complex, dynamic, and multi-layered, the theoretical conceptualization is rather simplistic. *Second*, impacts and interplays of heterogeneity might be visible over a longer period, which hasn't been the focus of studies on collective action. The study concludes by outlining an agenda for future research (with the case of Nepal) on heterogeneity in collective action situation. Here, integrating the key findings, the study demonstrates how the dynamic conceptualisation of heterogeneity can be operationalised through a longitudinal study with a macro-micro-macro-orientation.

Keywords: *collective action, diversity, heterogeneity, institutions for collective action*

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List of Abbreviations

IAD	Institutional Analysis and Development
SES	Social Ecological Systems
ICA	Institutions for Collective Action
KII	Key Informant Interview
CIS	Combined IAD-SES Framework
SC	Scheduled Caste
MYRADA	Mysore Rehabilitation and Development Agency

CHAPTER 1: INTRODUCTION

1.1. Background

Human cooperation—how human beings coexist, collaborate, and decide on matters relevant to social life has been a subject of scholarly inquiry in the social sciences for a long time. Economic theories, behavioural modelling, institutional analysis, have all tried to explain cooperative behaviour in human beings at group level, local, and national level. One of the most widely cited strands of research in cooperative behaviour deals with social dilemma situations—where the individual (private) returns without cooperative behaviour is higher than the returns from cooperative behaviour. For instance, in the case of natural resource management, early theorists like Garret Hardin (1968) in *Tragedy of Commons*, and those before him believed that when a group of actors collectively share a depletable, open-access resource, each actor rationally extracts the resource to maximise their profit which eventually leads to the complete erosion of the resource. This incapacity to overcome social dilemma was why top-down management regimes, and centralised control of resources was proposed as a solution. The underlying notion that human beings are better off in compliance to rules, than in cooperatively sharing the resource is central to the arguments proposed by political scientists that prioritised a greater role of the ‘modern states’, in many cases overriding existing local governance structures (Swartz 2019).

However, contrary to what Hardin theorised, Elinor Ostrom, and scholars at the Workshop in Political Theory and Political Analysis at Indiana University demonstrated through a series of empirical evidence that societies were indeed able to collectively decide on resource management and provisioning rules to avoid said tragedy of commons. Early analysis of collective action focused in understanding the processes, actors, and institutions and demonstrated how individuals can organise themselves, forming institutions that allow them to share the cost, risks and benefits, and democratically use the resources. The empirical work aided the development of some of the key theoretical frameworks that guides the study of collective action—the Institutional Analysis and Development (IAD) and Social-Ecological Systems (SES) framework, also including the seven *design principles* for successful institutions for collective action (ICAs) (Ostrom 1990). These frameworks are used as diagnostic tools to help with agenda setting, issue framing, and analysing policy options (McGinnis and Ostrom 2014; Ostrom and Cox 2010; Ostrom 1986). They will be discussed in detail in the sections that follow.

Three decades later, the application of the theoretical frameworks on collective action has expanded way beyond its initial application in resource governance (van Laerhoven, Schoon, and Villamayor-Tomas 2020; Feiock 2013). Now, these frameworks have been analysed to study cooperative behaviour and collective action in multiple aspects, for instance in cooperatives, historical commons, self-governing institutions (Laborda-Pemán and De Moor 2016; De Moor 2021; Sjöstedt and Linell 2021; Tavares and Feiock 2018). Here, while the design and implementation of these institutional parameters, their embeddedness within the larger environmental and governance structures has been discussed at lengths, the existing literature doesn’t elaborate much on the interplay and interaction of heterogeneity of members on the functioning of ICAs and collective behaviour.

Whether heterogeneity of members (within the groups) increases or decreases the possibility of collective action, and how it changes the cost of overcoming the social dilemma are questions that remain unanswered at large (Poteete, Janssen, and Ostrom 2010; Varughese

and Ostrom 2001; Lore M. Ruttan 2008; L. M. Ruttan 1998). There have been very few standalone studies that look at the role of heterogeneity in terms of the diversity of actors, their costs and benefits in collective action—the results have been largely non-conclusive (Lore M. Ruttan 2008; Lore M. Ruttan 2006; Varughese and Ostrom 2001). Few studies that looked at socio-economic heterogeneity show mixed results, none were longitudinal, and impacts of heterogeneity was measured through proxies like trust, social cohesion (Van Klingereren and De Graaf 2021; Aksoy 2019). Simultaneously, a range of empirical studies, in their concluding remarks note that the findings might be different owing to contextual factors. The underlying assumption is here that, heterogeneity of actors, their norms, is one of the key unexamined contextual factors. In addition, this denotes that the existing literature hasn't studied the full range of factors that can influence collective action situations, and this also limits the generalisability of the interactions noted by existing literature.

Beyond the collective action situation, the increased interest in the role of heterogeneity stems from two interrelated events. *First*, societies are becoming more diverse on ethnic, cultural, and economic dimensions due to increased migration, globalisation, and more (Van Klingereren and De Graaf 2021). While this doesn't negate the fact that historical societies were completely homogenous (for instance, race segregation in US, contentious relationship with indigenous communities during colonisation, and more), the democratic nature of contemporary societies strive to overcome the structural barriers, domination and exclusion of the past. Here, the desire is for greater inclusion and equality, there is considerable effort to combat and correct for the historical exclusion, segregation, and discrimination. Against this backdrop, the increasing diversity necessitates adaptations to existing structures to maintain and improving the cohesiveness of society and societal institutions. Understanding how heterogeneity impacts the conditions required for cooperative behaviour, whether it drives divides in the interests and costs of individuals is of paramount significance. *Second*, the institutions for collective action, are proposed as democratic alternates to top-down governance solutions for majority of our society's challenges—in climate change, social polarisation, natural resource management, etc, these contexts will be discussed in later sections. Here, the regulators and interest groups increasingly prioritise the issue of 'inclusiveness' and 'equality' within existing institutions for collective action. Understanding if/when heterogeneity creates inequalities and/or excludes people in the collective action situation will help identify ways of building inclusive institutions.

1.2. Motivation and purpose of the study

How has heterogeneity of actors been defined in the context of collective action—what are the sources, indicators for measurement? What aspects of collective action—internal functioning, additional outcomes—is heterogeneity studied with respect to? These are the key questions that the study aims to answer. The study is an effort to collate the existing body of literature within the collective behaviour, commons literature to analyse how (if any) considerations—in the design, decision making, and practice—have been given to the influences of heterogeneity. On one side, there is a growing understanding that ICAs, and other community-based, or self-governing institutions are nested in an extremely dynamic layer of complex institutional structure—that set the pre-conditions for collective action. More so, in an evolving global economic and political situation, the factors that influence these institutions externally are ever evolving and prioritise values of inclusion, equity. On the other hand, while literature on collective action does acknowledge that actors within an ICA can be heterogeneous in terms of access to power, property, knowledge, reliance on resource, demographic feature, and more—these factors and their interplay isn't considered.

The existing body of literature exploring the interaction and influence of heterogeneity are standalone case-studies with mixed results—this leads to two main concerns. *First*, there is a lack of an overarching and unifying framework, or a theory that outlines all the ways in which members within an ICA, or collective can be heterogeneous, and how it interplays with the contextual factors. Societies are becoming more heterogenous, competitive demands for natural resource is expanding exponentially, and areas where cooperative behaviour is essential is ever increasing (Van Klingeren and De Graaf 2021). Here, answering how heterogeneous actors influence and adapt to the internal functioning of existing ICAs can help answer how the evolving situation will influence these institutions. In addition, a unified understanding on these interactions will guide decision-making and policy guidelines aimed at promoting and fostering collective action among diverse actors, and the increasingly divergent interests. *Second*, there is very little acknowledgement and exploration of how overlapping sources of heterogeneity (eg. social and economic heterogeneity) can influence the functioning of the ICA. The impetus for this study stems from the realization that the literature elaborates little on the dynamics of heterogeneity (for instance, the overlap of different types of sociocultural and/or economic heterogeneities) and its influence on collective behaviour. For this reason, where the discourse isn't clear, the study explores similar discussions in behavioural sciences, organizational behaviour, social behaviour theory, literature on cooperative behaviour, and social cohesion. Here, unpacking and linking knowledge from other disciplines—where cooperative behaviour in group context is considered—the study elaborates on the multiplicity, conditionality, and overlapping interactions between the factors resulting in heterogeneity in the collective action situation.

Succeeding chapters are outlined as follows. Chapter 2 outlines the methodological approaches used for the study. Chapter 3 discusses the key theoretical frameworks used for analysis of collective action, and the conceptualisation of heterogeneity within these frameworks. Chapter 4 present a discussion on how heterogeneity of actors influences the internal functioning of the ICAs. Chapter 5 analyses heterogeneity and its influences in the larger contexts within which the ICAs are located, the processes of establishing collective action, and the dynamic and overlapping nature of heterogeneity. Finally, Chapter 6 summarises the study, presents the concluding remarks with a research agenda for a comprehensive analysis of heterogeneity of actors in collective action situations.

Chapter 2: METHODOLOGY

As discussed in the earlier chapter, the aim of this study is to build a unified understanding that summarises the theoretical and empirical work on how heterogeneity of actors influences the functioning of institutions for collective action. In this chapter, I discuss and explain the approach of the study with a description of the analytical framework and methodology. Where relevant, I explain the overall range of the topic under consideration and the rationale behind the choices made to fit the scope of this study. This is followed by a brief discussion on the methodological limitations.

2.1. Research design

I begin with a thorough interrogation of the prominent theories and frameworks used in the study and analysis of institutions for collective action. Here I use an exploratory approach to build the analytical framework that guides the study (as shown in figure 1.).

First, through a structured inquiry, I analysed the conceptual standing of the two main questions relevant to the study, “*How has heterogeneity of members been conceptualised? What effects are anticipated for collective action?*”. This step helped in establishing a non-exhaustive set of parameters that lead to heterogeneity of actors, and a set of interactions that are relevant for successful collective action. Next, I used the analytical framework to methodically examine the empirical evidence that focus on heterogeneity—here, I take an interpretive approach.

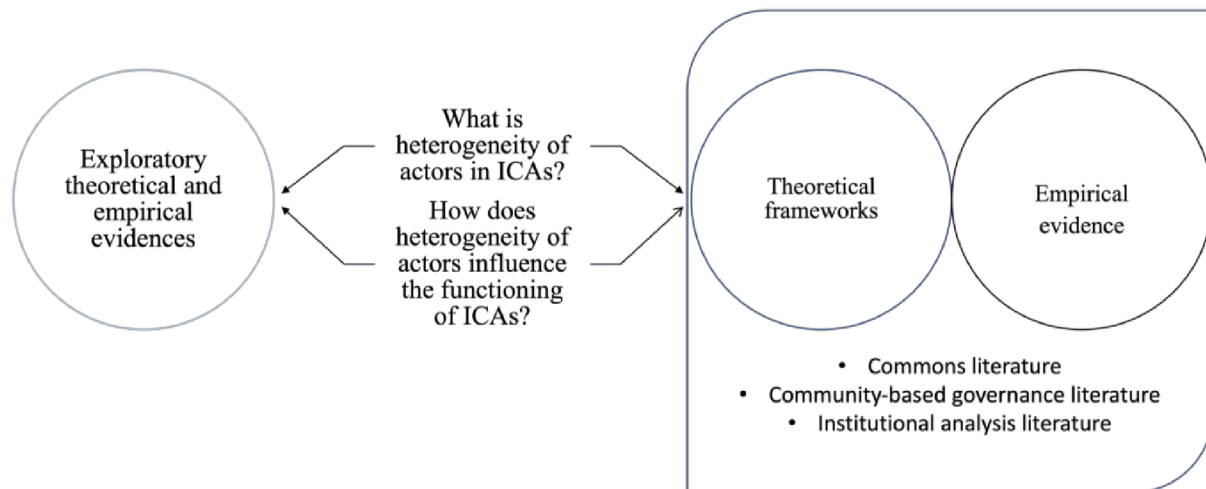


Figure 1: Analytical framework of the study

Analytical scope

In both instances, I focus on largely on work post-1990s for two main reasons. *First*, the prominent theories used in present day to analyse collective action—the design principles, the SES and IAD frameworks—that guide institutional analysis on the same were first published around that time. These frameworks derive from and are applied to a range of disciplines related to the topic, including but not limited to political science, governance, resource management, social cohesion, etc (Frantz and Siddiki 2021; Lien 2020; van Laerhoven and Ostrom 2007). *Second*, the application and discourse around collective action has significantly grown and evolved after 1990s—multiple review articles have noted that the number of papers published on collective action have dramatically increased in the years after 1990s, more than they were published before (Lambert et al. 2021; van Laerhoven, Schoon,

and Villamayor-Tomas 2020). From this, one can deduce that the novelty, and critical perspectives within this field might have developed during this period, and where necessary they would have referred to earlier publications.

Throughout the study, I take an overall micro-macro inferential stance. Despite drawing from multiple micro-level case studies, and sector-specific empirical studies, I stick to the framework level analysis and understanding of collective action. *First*, the frameworks are very often used as diagnosing tools. The macro-level outlooks help me investigate micro evidence across a range of disciplines and see if the frameworks are asking the right questions to measure the appropriate interactions of heterogeneity. *Second*, the key caveat of research on heterogeneity and collective action has been that empirical evidence are spread across disciplines and across highly detailed single or small-N comparative case studies, or large-N quantitative studies without in-depth analysis. Here, the macro-level orientation helps make these micro-macro links, which has been used as an extremely useful tool of explaining social phenomena (Raub, Buskens, and Van Assen 2011).

Exploratory evidence

Although the major conceptual focus of the study remains within institutions for collective action, and cooperative behaviour, I briefly move beyond these topics to explore if there is a similar discourse beyond commons literature. This is because the rationale behind this study stems from the realisation that despite being considered important, heterogeneity is an understudied topic within collective action literature. So, consolidating the work within this topic would not really suffice in building a more complete picture of how heterogeneity affects cooperative behaviour. Additionally, the dilemmas faced by scholars in the commons literature—of balancing, including, and addressing diverse interests—is common with other disciplines. For instance, managers trying to promote cooperative behaviour among their employees, among behavioural scientists trying to identify drivers of our consumer behaviour, and so on. Here, my motive is to ensure that the insights from other disciplines, particularly those related to experimental simulations, game theory, and field-based case-studies that address heterogeneous actors as a whole, or some manifestation of it in terms of norms, context, culture, inequality, power, are introduced in the study. However, owing to the time constraints, the collection of data was limited to review articles, and highly-cited papers, the search strings are included in Table 1.

2.2. Data need & collection methods

Data needed for the study were qualitative, and largely based on secondary sources—journal articles, books, reports, policy documents, and more. The primary data were collected through Key Informant Interviews (KII) and used mainly to validate the key findings (see 2.2.3. for more information on the primary data).

2.2.1. Secondary data

The starting point for the data collection effort was the conceptual and theoretical papers published by Elinor Ostrom and other scholars at the Workshop in Political Theory and Political Analysis at Indiana University, beginning with the author's most prominent publication *Governing the Commons* (1990). Then the preceding theoretical papers, empirical work that build on the discourse were also included.

The logic for collection of empirical literature required for this study was guided by three steps. *First*, Ostrom's theoretical conceptualisation of collective action is heavily reliant on empirical data, so these publications referred to a range of empirical work relevant to the

conceptualisation of heterogeneity—they were automatically included within this study. *Second*, the few empirical studies that explicitly deal with the study of social and/or cultural heterogeneity within the collective action context (some of them also referred by the theoretical frameworks) were included. *Third*, the first two steps helped identify a set of parameters that either defined a new context in which heterogeneity of actors could be relevant within the subject of interest, or the types of attributes that heterogeneity of actors affect. Similar keywords were used for other systematic reviews of this kind (Wang and Chen 2021; Brooks, Waylen, and Mulder 2013). The list of parameters changed as the data collection procedure advanced, a summary of the key parameters and the process are included in Table 1.

The data was extracted from Web of Science using the search strings presented in Table 1. Web of Science database was chosen over alternatives such as Google Scholar and SCOPUS because studies similar in nature as this one have noted that it provides higher precision, recall, and reproducibility (Lambert et al. 2021). Here, Web of Science does have its own set of limitations related to citation bias, limited bibliographic data, and being discipline specific (S. Adriaanse and Rensleigh 2013). However, Web of Science is shown to have a greater coverage of the journal sample population. This was one of the pre-requisite to ensure the representativeness of the exploratory evidences included for this study.

The empirical literature identified by the first two steps were almost fixed and could be easily accessed through the online repository of the respective journal. However, third step required some level of scrutiny. The initial point of departure as outlined in Step 3, was to identify the discourse around heterogeneity (social and economic) within the commons and collective action literature. Within any given sub-topic (for example, Norms AND collective action*), the initial results were more than 200 on average. Owing to the time constraints, it would not have been possible to sift through them all. Hence, using the filters available in the search engine of Web of Science (see Table 1 for the filters used), the first point of reference included the highly cited papers, and review articles under each meso-topic—and snowballed to other papers cited by them, or based on screening of the abstract. Here, I give special consideration to the parameters like norms, trust, social context, diversity, etc that were identified by the analytical framework of the study. Within commons literature, and institutional analysis literature, I stop the data search after a saturation point of either the key publications, or the theory was reached.

In total, 105 literature was reviewed for the study, of which 78 were related to commons (common property management, collective action, common pool resource management, ICAs, etc.) literature, and 27 were from other domains (organization management, diversity management, behaviour studies, etc.).

Table 1: Schematic representation of the data collection process

Step 2: Identification of general trend	
Heterogeneity AND (collective OR co-op OR common OR community OR Cooperat*)	
Economic heterogeneity AND (collective OR co-op OR common OR community OR Cooperat*)	
Social heterogeneity AND (collective OR co-op OR common OR community OR Cooperat*)	
Step 3: Parameter-specific	
Norms AND collective action*	Power* AND collective action*
Trust AND collective action*	Heterogeneity AND cooperative behaviour*

Social context* AND collective action Inequality* AND collective action Equity* AND collective action* Caste* AND collective action*	Norms AND cooperative behaviour*Diversity* AND organisation behaviour Social diversity AND organisation Cultural diversity AND organisation
Screening (filters)	
Meso-topic	Forestry, Economic Theory, Political Science, Economics, Human Geography, Social Psychology, Sustainability Science, Anthropology, Political Philosophy, Public Administration, Behavioural Science, Gender and Sexuality Studies, Management
Document types	Highly cited papers Review articles (publication year filters)

2.2.2. Primary data

Primary data for the study was collected mainly for the purposes of quality assurance. The sources were key experts in the field of collective action, commons, institutional analysis, that were consulted to validate the key findings, and provide overall feedback. Additionally, some key field experts that are working in the context of community-based resource management in Nepal were consulted to confirm the Nepali case study.

4 Key Informant Interviews (KIIs), each 40-50 minutes long were conducted, and the informants were identified based on their engagement with the key organisations involved in this sector, or their academic profile that demonstrated their expertise relevant to the study. These informants further helped identify other experts (snowballing) a description of the informants is included in Appendix 1. The KII was guided by a checklist which is included in Appendix 2.

2.3. Data management and analysis

2.3.1. Secondary data

Secondary data formed most of the data used for the study, and they were managed and analysed using a meta-database. The documents reviewed were summarised in the database using keywords that helped identify the timeline, scope, context of the study, the type of study, and most importantly, the thematic category relevant to this study. Here, the various thematic categories, and parameters under which the interaction of heterogeneity was noted was guided by the analytical framework, which was in turn designed from the thorough review of the key theoretical and conceptual frameworks. Content analysis was done to inform the exploratory and interpretive analysis relevant to the study—where necessary, tables and figures have been inserted to support the analysis.

2.3.2. Primary data

The data collected through KIIs were transcribed based on the audio recording, and notes taken during the interview. The transcription and notes were exclusively checked for inconsistencies and completeness, which concluded the processing of the data. Next, data collected for quality assurance purposes either confirmed the author's work, or suggested additions and amendments that could help improve the study. In the latter situation, these notes were integrated within the analytical framework. For the case study, the data informed and/or corrected the narrative of the case study that was built on secondary data, and hence was analysed and included within the case study.

2.4. Ethical consideration

Informed consent was taken from all the participants before conducting KIIs, and verbal consent was taken before recoding audio. The individuals consulted during the study were not pressurized to participate and individual autonomy has been respected. Anonymity and confidentiality have been maintained throughout the research and responses have not been identified individually during data analysis and presentation. All the secondary sources used for this study have been adequately cited.

2.5. Limitations

Owing to the limited timeframe within which this study was conducted, there has been some selection bias in the choice of topics, and the breadth at which each topic could be explored. For instance, the ambivalence of heterogeneity of resources leading to heterogenous actors, or heterogeneity as a function of group size—where heterogeneity might increase as the group increases in size, are not explored by this study. However, where relevant, I make note of these overlooked aspects and outline it as topics to be explored in the future. Another key limitation of this study is that while it collates and interprets data from multiple disciplines, and different sectors, and types of studies, in some cases, there can be a lack of specificity. For instance, certain manifestations of heterogeneity depend and differ based on the context. Here, a main part of this shortcoming is compensated by the choice of the analytical framework of the study to remain at the framework level. This ensures that the inferences and interactions noted by the study can feed into the framework which serves as a diagnostic tool in multiple contexts. In addition, where relevant, I make note of the specificities, and outline interactions that could guide future research specifically in this context.

Chapter 3: Theoretical Conceptualisation of Heterogeneous Actors

In this chapter, I introduce the key concepts that will be recurring throughout the study—collective action situation and the conceptualisation of heterogeneity within dominant institutional analysis frameworks.

3.1. The collective action problem—how and when do rational actors cooperate?

While there are multiple economic, sociological, and psychological explanations for cooperative behaviour, there are three main models that explained how rational actors (un)cooperate in constrained conditions. These constrained conditions will be hereafter referred to as social dilemmas, which occur whenever the private returns to each participant in a group is greater than the share of joint return no matter what other participants do (Ostrom 2005; Vriens, Buskens, and de Moor 2021; Coate and Ravallion 1993). These models that state the underlying assumptions and conditions for collective action to overcome social dilemmas are Hardin's tragedy of the commons; the prisoners' dilemma model; and Olson's logic of collective action.

Garret Hardin (1968) in **the tragedy of commons** states that in situations where a resource is held in common without restriction to use, rational individuals will have an incentive to use additional units of the resource for their own benefit, and every rational user will do the same leading to overexploitation and complete depletion of the resource. With the example of a pasture shared by multiple farmers, Hardin claims that every farmer has the incentive to add livestock to increase their own profits, which will lead to the overgrazing of the livestock eventually harming the whole group. Either the market or the government is proposed as the most suitable actor to regulate cooperative behaviour in this context.

The prisoners' dilemma is a popular game-theory scenario that explains cooperative behaviour using a two-actor model. Here, the condition is that when both actors 'the prisoners' cooperate, they receive moderate rewards. And if one betrays the other, the one who betrayed will receive a higher reward, the remaining one gets punished. Finally, if both actors decide to betray each other, they receive a reward smaller than what they get when they both cooperate. This shows that under contexts where the prisoners don't know each other well, or can't trust the other to cooperate, they are likely to betray, which means that they both get a lower reward. This model is used to demonstrate that a group of actors that don't know each other well or can't trust each other are more likely to free-ride or deviate from cooperative behaviour (Dawes 1980).

Mancur Olson (1965) in *The Logic of Collective Action* proposed what would later be known as the "**zero contribution thesis**" which states that, "[U]nless the number of individuals in a group is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, *rational, self-interested individuals will not act to achieve their common or group interest*" (Olson 2003). This thesis has been used to explain why cooperative behaviour fails in groups unable to control free-riding, or in large groups where the benefit of collective action is spread across a range of individuals.

The underlying rationale for these models is that in any given group context, individuals have different interests, incentives, costs, that guide their behaviour—this concept will henceforth be referred to as **heterogeneity**. While the subjective application and definition of heterogeneity varies, at its simplest form, heterogeneity represents differences. Depending on

the strand of social science research, terms like diversity, multiplicity, plurality are also commonly used connotations to indicate that a group is made up of heterogeneous components. For instance, for anthropologists differentiated people in a heterogeneous group into homogenous sub-groups based on their shared culture (Bhagat and McQuaid 1982), economists might define heterogeneity based on some other shared traits like income level, demand, and so on.

Here, the theoretical underpinning is that self-interested individuals will have extreme difficulty in acting in the larger common interest of the group without external coercion. This is especially demonstrated in contexts like public goods provision, natural resource management, and social movements (see Swartz, 2019 for further elaboration). For instance, individuals might not be willing to contribute to the maintenance of a public park, or a pedestrian walkway thinking that it belongs to everyone, and they will be able to use it even without contributing. Or like in Hardin's example of the pasture, or in fisheries, or in forests, individual consumers might be tempted to consume more thinking every other person sharing the resource might be doing so. In each situation, left to their own devices, these groups of 'rational' actors seem to be destined to find themselves and their public goods and resources in a worse situation. A similar logic has been used to frame the discourse on majority of the social dilemmas faced by modern societies—from overpopulation, democratic governance, resource exploitation, climate change, and more. Here, the key policy implication of this perspective is for greater government control, privatisation of resources and services, and the need for institutions and mechanisms to overcome individual self-interest and coordinate collective action.

However collective action both formal and informal have existed well before modern day states were created. From managing and using historical commons to the management of resources by indigenous communities and local communities there are plenty of theoretical and empirical evidence to substantiate that cooperative behaviour is widespread, have survived multiple generations, and is able to organise self-interested actors to monitor and sanction free-riding (De Moor 2021; Grisel 2019; Baland and Platteau 1997; Ostrom 1986). In a way, for every argument for why collective action is not possible; there were empirical evidence that proved that communities, and groups could overcome the collective action problem.

The prevalence and success of collective action prompted scholars to identify the common elements that lead to successful collective action within groups, and in the larger socio-political contexts. At the group level, the micro-analysis focused on collective action within institution, this led to the development of the *design principles* for successful and robust self-organised institutions (Ostrom 1990). For the context relevant to this study, Crawford and Ostrom (1995) define institution as, “a widely understood rule, norm, or strategy that creates incentives for behaviour in repetitive situations” (Crawford and Ostrom 1995). Formally, they can be law, policy, or procedure, or can emerge informally as norms, standard operating practices, or habits (Crawford and Ostrom 1995). On a macro level, the scholars also realised that the institutions exist in a complex, nested systems operating at multiple scales that shape and reshape each other (Polski and Ostrom 1999). This prompted the study of the larger context and led to the development of widely used frameworks for institutional analysis, the Institutional Analysis and Development (IAD) framework, and the Social-Ecological Systems Framework (SES), these will be discussed in the sections that follow.

3.2. Theoretical underpinnings for collective action

3.1.1. Design principles for successful collective action

At the foundational level, Ostrom (1990) reviewed a range of different empirical evidence, and proposed a set of common principles that guides successful collective action at group level, as noted in *Governing the Commons*, these principles are summarised in Table 3.

Table 2: Design principles for successful collective action (Ostrom, 1990)

S.No.	Principle	Explanation
1.	<i>Clearly defined boundaries</i>	The users/appropriators are clearly defined, and access to outsiders is closed.
2.	<i>Congruence between appropriation and provision rules and local condition</i>	Appropriation rules—the rules restricting time, place, technology, and/or quantity of resource units—are related to the provisioning rules—the rules outlining details like rent paid in terms of labour, material, and/or money, and benefits extracted. In addition, these rules are in line with the local conditions, and the balance of rent paid and benefits extracted should be mutually-agreed.
3.	<i>Collective-choice arrangements</i>	The people affected by the institution can participate in modifying its operational rule—they can interact with each other, account for changes to the physical world, and modify rules to enhance compliance.
4.	<i>Monitoring</i>	The actors and environment is regularly monitored as per the mutually agreed rules, and as needed, the violators are sanctioned.
5.	<i>Graduated sanctions</i>	The sanctions for violators are graduated—they begin with small fine for first-time, and the intensity and nature of sanction increasing with repeat offenders, or the gravity of violation.
6.	<i>Conflict-resolution mechanism</i>	Efficient and effective conflict resolution mechanism are in place to ensure users still view the institutions as just, trust each other, and reciprocate their cooperative behaviour.
7.	<i>Minimal recognition of rights to organise</i>	As needed, the users are able to devise their own institutions without being challenged by external government authorities.

Although not explicitly stated, the design principles lay out the basic components that help in ensuring quasi-voluntary compliance among heterogeneous actors and interests. The principles are focused on building trust, sense of fairness, among these actors so they are confident that every actor within the institution will hold onto their end of the bargain (Pretty and Ward 2001; Ostrom 1990). Henceforth, these principles have been adapted and extensively used to analyse different contexts of common-pool resources like fisheries, forestry, agriculture, etc and (re)evaluating existing institutions, analysing institutional legitimacy and collective action, and more (Poteete, Janssen, and Ostrom 2010).

Nested enterprises

When scholars examined the institutional parameters that lead to successful collective action, they quickly realised that the action is situated in a ‘complex, interconnected, and dynamic’ institutional framework (Cole, Epstein, and McGinnis 2014; Ostrom 2005; Varughese and Ostrom 2001). In addition, there was a growing consensus among scholars that the design principles in themselves have limited credibility in shaping outcomes—they must interact with the context, and governance structures that are beyond the reach of the principles (Wang and Chen 2021; Baggio et al. 2015). In response to this feedback, and also to address the advancement in the analysis of collective action, Ostrom and colleagues developed the Social and Ecological Framework (SES) framework, and the Institutional Analysis and Development Framework. Similar to the design principles, the SES framework was developed to structure inquiry within resource management regimes (van Laerhoven and Ostrom 2007; Ostrom 2009; McGinnis and Ostrom 2014). However, the IAD builds on these

frameworks and provides a dynamic way of analysing the political-economic factors that affect the action situations that shape and are shaped by the institutions and their larger institutional structures. Most recently, a Combined IAD-SES (CIS) framework has been proposed (see Cole, Epstein, and McGinnis 2019) to enable a more dynamic and contextualised analysis of collective action. I provide a brief overview of these frameworks and conclude this chapter by locating the conceptualisation of heterogeneity within these frameworks.

3.1.2. The Institutional Analysis and Development (IAD) framework

As Cole et al., (2019) describe,

“[T]he IAD framework represents institutional processes by a series of boxes within which different variables or processes are located. At the heart of the IAD framework is the action situation, an abstraction of decision environments in which individuals and corporate actors interact with one another, making choices that jointly determine outcomes of some aspects of a policy question” (Cole, Epstein, and McGinnis 2019).

Figure 1 gives the representation of the institutional processes, and various contextual factors that shape the action situation (Cole, Epstein, and McGinnis 2019).

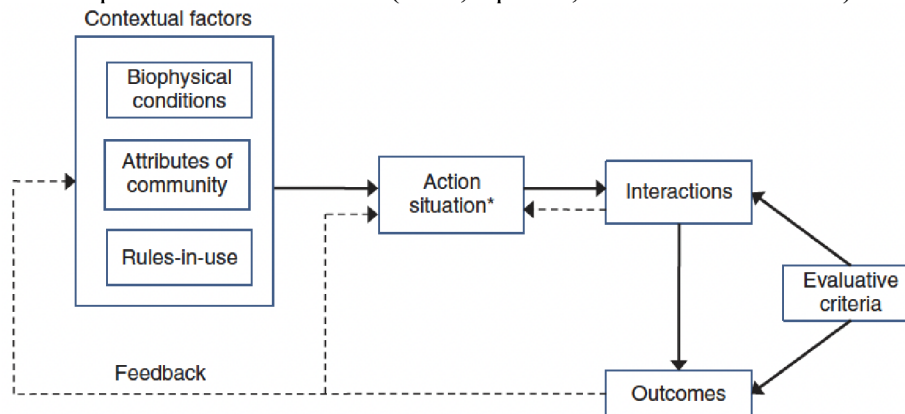


Figure 1: The Institutional Analysis and Development framework (Cole et al., 2019 as adapted from Ostrom, 2010)

The **contextual factors**—that were initially proposed as exogenous factors—are the values assumed by relevant variables that influence the action situation. These contextual factors can be directly linked and shaped by the focal action situation (under consideration) or they can be shaped by a network of inter-connected action situations. These contextual conditions are grouped into three categories (Cole, Epstein, and McGinnis 2019):

- (i) the ‘nature of good’ under consideration, which includes all the relevant biophysical conditions;
- (ii) ‘**attributes of the community**’, which includes the social ties, and the cultural context within which individuals interact;
- (iii) ‘**rules in use**’ the existing configuration of laws, regulations, rules, norms, and shared understanding held by the participants to be relevant to their deliberations

Primarily, the action situations analysed by the IAD framework deal with collective action situation where an individual’s belief and incentives directly shape the action situation. These individual belief and incentives are expected to be shaped by their social position, responsibilities, and expectations. Or, it can be influenced by the information that is available to them. As noted in Cole et al. (2019), the action situations can occur at three levels:

- i) the operational-choice settings where actors’ and their actions directly impact outcomes;
- ii) the collective-choice settings in which actors shape the rules that constrain actors in operational-choice arenas;
- iii) the constitutional-choice settings where the actors and institutional mechanisms for the various levels are determined.

3.1.3. The Social and Ecological System (SES) framework

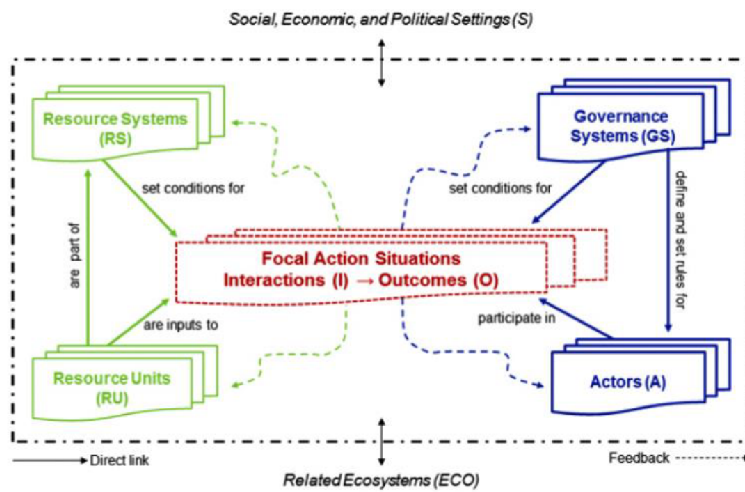


Figure 2: The Social-Ecological System (McGinnis & Ostrom, 2014)

Despite its utility, with time, multiple scholars noted that the IAD framework did not pay sufficient attention to the diversity and complexity of natural processes (Berkes and Folke 1998; Agrawal 2003; Ostrom and Cox 2010)¹ and to alternative social science theories. The SES framework was developed specifically for closely understanding the factors that influence social-ecological settings. The framework envisions each focal action situations—where different subsystems, and actors interact to produce the outcome—interacts with and shapes the interconnected sub-systems. As shown in the figure, the resource units that are a part of a resource systems provide input for the action situation. The resource systems set condition for the action situation where the actors participate in. These actors are defined, and act according to the rules set by the governance systems, that also set the conditions under which the action situation takes place.

The action situation also interacts with other related ecosystems, and social, political, and economic settings. Here, the exogenous influences from ecological systems of social-economic-political settings that can influence the components of the SES are depicted by the dotted-and-dashed line that surrounds the interior elements. Here, the exogenous influences are expected to emerge from the dynamic operation of processes at larger or smaller scales than that of the focal SES. For example, when a national government signs onto an international treaty, and makes national-level policy changes to adhere to that, it can alter the operational rules for the actors in the focal action situation. Another instance would be commercial wood loggers lobbying for changes to forest product use regulation that would change the rules for all types of forest users.

Resource Systems, Resource Units, Governance Systems, and Actors are the highest-tier variables that contain multiple variables at the second tier as well as lower tiers. The resource system and resource units denote the biophysical nature of the resource under consideration,

¹ Berkes and Folke (1998) argue for an integrated approach to management—one that integrates the complex interplay of social and ecological factors and how they shape and reshape each other. In doing so, the book shed light on the inadequacy of current analysis frameworks in properly locating these complex socio-ecological interaction. Agrawal (2003) provides a critique of the commons literature and the need to provide a more historical and comprehensive analysis of all the processes and social structures related to common property management. Ostrom and Cox (2010) acknowledge the complexities in these interactions, critique the tendency of social scientists to recommend simple panaceas as a solution and necessitate the SES.

the types and number of resources contained within the boundaries. Governance systems includes the actors, organisations involved in making the operational, collective-choice and constitutional-choice rules that affect the functioning of the overall system. The **actors** are individuals that interact with the action situation—this includes the direct users or consumers of the product in question and other indirect actors like the larger local community, or groups that derive non-direct value from the product (McGinnis and Ostrom 2014; Ostrom 2009). These first-tier sub-systems further decompose into second-, third-, and in some cases even fourth-tier variables. This nested structure allows for intricate analysis of all the components that shape the action situation, and it is the comparative strength of the SES framework over the IAD framework.

3.2. Locating heterogeneous actors within the theoretical frameworks

Initially referred to as ‘users’ in the earlier versions of the theoretical frameworks, scholars now commonly use actors (hereinafter the term used by this study) as a common term to refer to the users, regulators, involved in the action situation (Crawford and Ostrom 1995; Ostrom 1990). Actors are the central focus of any policy analysis and institutional analysis, because at the core, the effort of the inquiry is to understand and explain how these actors interact with each other, with various sub-system within the social-political ecosystem and shape institutions and outcomes (Epstein et al. 2015; Ostrom and Cox 2010). Crawford & Ostrom (1995) in *Grammar of Institutions* believe that the rules, norms, or strategies—as they call it, the institutional statement—apply to only a subset of actors within a group. They define the parameter used to establish a subset of the group interacting with the institutional statement as *attributes*. The attributes are the features based on which actors in a heterogeneous groups are divided into a subset of homogeneous actors. Here, the individual-level attributes are defined as “values assigned to variables such as age, residence, gender, citizenship, and position” (Crawford and Ostrom 1995). When the actors are a group, these attributes are “organizational variables like size of membership, geographic location, or ownership of the residuals”. Thereon, significant effort has been put to identify the features of these actors that are relevant for the purpose of analysis, the various attributes by which they differ from one another, and how these attributes interact with the incentives and rules to shape behaviour.

While the theoretical frameworks do not explicitly prescribe a methodology to analyse the influence of heterogeneity, empirical applications have done both qualitative and quantitative analyses. Here, the qualitative analysis employs different inferential techniques, case study analysis, etc to elaborate on the interaction. The quantitative analyses are undertaken through nonparametric Spearman’s rank correlations between explained and explanatory variable.²

To summarise, the theoretical frameworks define heterogeneity in an action situation can be present along easily traceable attributes—for instance demographic attributes like age, gender, income and consumption level, dependence in resources, technologies available, history of past attributes, cultural background, etc. Similarly, heterogeneity can also be present in implicit attributes—like norms, values, trust, power, leadership, etc. Overall, they are expected to either homogenise the actors in the action situation or create some divergence. The following chapter will survey empirical studies that operationalize this conceptualization of heterogeneity and provide an extended discussion on their role in the collective action situation.

² For more insights into the methodology, see: (Van Klinger and De Graaf 2021; Lore M. Ruttan 2008; Lore M. Ruttan 2006; Varughese and Ostrom 2001)

Chapter 4: Heterogeneous Actors in Collective Action Situation

In this chapter, I provide a review of empirical studies to discuss how heterogeneity of actors has been measured in relation to collective action, and what kinds of interactions have been noted for the same. Before proceeding with a detailed discussion on the heterogeneous actors, it is worth noting that at its simplest form, scholars believe that high levels of homogeneity provides the most conducive situation for cooperative behaviour (Kanbur 1992). This line of thinking stems from the assumption that within homogeneous groups and institutions there are few contours along which disagreement might happen, symmetrically heterogeneous³ groups have been shown to cooperate less than homogeneous groups (Fung and Au 2014). Homogeneity is also shown to have cognitive and behavioural effects—similar actors are more likely to adopt each other's traits, hence increasing the likelihood of cooperation (Axelrod 1997; Milliken and Martins 1996). In an ideal situation homogeneity is expected to provide baseline conditions for efficiently inducing cooperative behaviour, and reducing the externalities that arise when heterogeneity is present.

However, heterogeneity is the reality of our world, and the study of collective action is concerned with how, and under what conditions these individuals cooperate with each other (Ostrom 2000). The preceding chapter outlined the theoretical conceptualisation of the conditions, institutional parameters that allow individuals—some more willing to cooperate than the others, or with differing interests and costs—to design institutions that reinforce the cooperative behaviour. The remainder of this chapter is organized in the following way. First, I discuss the intra-group influences of heterogeneity in a scenario where the primary goal of the ICA is to facilitate cooperative behaviour and to ensure that there is provision of the collective good. Here, the collective good can be externally determined by institutional actors beyond the group or decided internally. Second, I discuss the intra-group interactions to a scenario where the goal of the action situation is to also ensure that collective action is equitable, just, accessible, and sustainable.⁴ Finally, I place these ICAs in a larger social context with heterogeneity and explain the influences it might have on the collective action situation.

4.1. Will they, won't they—the minimum conditions for collective action

As mentioned in earlier chapter, a majority of theoretical frameworks, and empirical studies focus on the conditions that enable actors to engage in cooperative behaviour. These conditions are linked to the incentives/costs of collective action, the role of trust and reciprocity, and the role of the action situation in mitigating the discrepancies, they will be discussed in the following sections.

The incentive/cost of heterogeneous actors

In a collective action situation, the incentives and costs relate to the expected benefits and costs of cooperation in the action situation. The conditional co-operators—the actors—in an

³ Fung and Au (2014) look into the intra-group dynamics, and define a symmetrically heterogeneous group as one in which the heterogeneity is equally distributed among the members i.e. the skewness of the heterogeneity is zero.

⁴ In democratic societies, the aim of institutions, and social structures is to ensure that the social interactions are equitable. The equity stems from a fair and impartial treatment of all individuals involved, which would also mean that the institution is accessible to all parties. These principles are well reflected within the theoretical frameworks (defined in section 3.2). The desire to build sustainable collective action originates from the fact that it takes a lot of effort to establish the collective action, and also because social dilemmas under consideration require continued collective action.

action situation are incentivized to participate to realize the provision of the public good and pay the transaction costs involved with the cooperative behaviour, and the opportunity costs of free-riding, or defection.

The dimension of incentive/cost generally is discussed within the context of economic heterogeneity. Here, heterogeneity is expected to create inequality of incentives—also known as Olson effect—this can result in some actors being motivated enough to invest in collective action on their own, and carrying the costs of cooperation (Van Klinger and De Graaf 2021; Olson 2003). In other words, for Olson, inequality of incentives is needed, in the absence of which, no actor would be intrinsically motivated to bear the costs of establishing the collective action. Here, economic heterogeneity introduces the difference that is expected to be crucial for collective action. However, the contrary might also be true. When economic heterogeneity is present, and wealthier actors have alternatives to the collective good produced by the ICA (which translates to higher opportunity costs), their incentive to cooperate might be less (Varughese and Ostrom 2001). However, the institution can offset these opportunity costs, and rather equalise the differences. In their study of community forestry in Nepal, Varughese and Ostrom (2001) show how the forest user groups provided the option for wealthy actors to contribute cash instead of their labour, while the less wealthy forest users continued to provide their labour. On one hand, the institution acquired crucial resources required for its smooth operation, and on the other, the disparities in costs were balanced by the flexible rules. Does differential contribution in the institution lead to informal differential in influence and claim over the resource? This needs further examination.

Socio-cultural heterogeneity can be expected to influence the costs of negotiation and bargaining in the action situation. In the absence of a shared social identity, these costs can go higher (Aksoy 2019; Bardhan and Dayton-Johnson 2002). Here again, the wealthier actors can be expected to bear the higher initial costs of organizing collective action, if the collective good is something they value (Gavrilets 2015).

Trust among heterogeneous actors

Actors must be able to trust each other within an action situation—only then will they continue to cooperate when they know that everyone will follow the institutional rules (Ostrom 1990). The design principles elaborate on the institutional preconditions that can enable a system where actors are able to trust each other. However, when socio-cultural and economic heterogeneity is present, do the institutions and rules have similar equalizing effect on trust?

As noted earlier, heterogeneity can change the perceived notions of incentives, and costs in the action situation. Here, when faced with the changes, the question of whether heterogeneous actors can trust each other (despite the differences) becomes significant. However, measuring trust is a difficult task. Scholars have devised proxies like social cohesion, social capital have been used to extrapolate the level of trust actors have on each other, or sometimes vice-versa. Both socio-cultural and economic heterogeneity can be expected to influence trust levels among the actors, but there isn't a conclusive answer. Narrative review of social capital—the ability of people to work together for common purposes—and cooperatives done by Saz-Gil, et al (2021) shows that trust and reciprocity greatly influence the circular and self-reinforcing relationship of collective action and social capital. Here, presence of social capital (generally expected from homogenous groups) promotes the creation and development of ICAs, and these institutions on the other hand strengthen the social capital within the group members.

Other studies show that modest levels of heterogeneity isn't problematic under the conditions that the divisions are bridged by well-established relations and social cohesion that bring the community together (Singleton and Taylor 1992). However, increasing levels of heterogeneity might decrease the cohesiveness within group members, and the social cohesion (also noted as social capital) is shown to be an important factor in ensuring the continuation of collective action (Toda, Hashiguchi, and Hiratsuka 2023; Saz-Gil, Bretos, and Díaz-Fonca 2021; Gutiérrez, Hilborn, and Defeo 2011; Ostrom 2010). Additionally, when analysed *vis a vis* trust, economic heterogeneity is shown to be negatively related to trust, which then can have influence on the collective action situation (Van Klingeren and De Graaf 2021).

How actors can create shared norms aimed at fostering trust and reciprocity amongst themselves, its influences on behaviour has been discussed by a few experimental studies, especially in the context of pro-environmental behaviour (Bergquist, Nilsson, and Hansla 2017; Farrow, Grolleau, and Ibanez 2017; Schultz et al. 2007; Nolan et al. 2008). Here, while normative cues are shown to promote an individual's intrinsic motivation and persuasion towards certain behaviour—the contrary may also be true. Experimental studies that focus on cognitive and interpersonal behaviour provide explanation for the influences population heterogeneity expressed as ethnic and linguistic diversity can affect citizen behaviour (Anderson and Paskeviciute 2006). In addition, a sense of fairness in the arrangement is shown to be important for actors to be able to trust each other and comply with the conditions of collective action (Ramcilovic-Suominen and Epstein 2015). This notion linking perceptions of fairness with cooperative behaviour is also supported by behaviour analysts (Ntuli et al. 2019). Here, the role of ICAs in enabling conditions for trust among heterogenous actors becomes even more relevant.

4.2. The elites and the institutional entrepreneurs

The elites, the influential actors within a group have been noted within the commons literature as 'institutional entrepreneurs'. Are the elites created because of the repeated action situation, or are they a result of existing heterogeneity? Are they beneficial or detrimental to collective action? The answer is not clear, but there is consensus that these actors are important in the action situation.

Few studies that focus on institutional entrepreneurs note that the action situations might benefit with the presence of the entrepreneurs that are willing to bear additional costs for the provision of the collective good, and establishment of the cooperative behaviour. Rather, the fact that there is unequal sharing of decision-making rights can create different motivation among actors to cooperate (Anderson and Paskeviciute 2006; H. Komakech, Condon, and Van der Zaag 2012). The presence of entrepreneurs within an action situation is also shown to ensure the principles of self-organisation and accessibility across the interlinked action areas (Meyer 2020). For instance, an extended analysis of participatory community-based development projects showed that heterogeneity doesn't have to be bad for developmental outcomes if the goal of collective action is just related to the success of the project. In the presence of social and economic heterogeneity, there can be inequalities, elites in the system, but there can be 'benevolent' forms of elite domination that can enable the project (Mansuri 2004).

On the contrary, the elite are shown to also have coercive interests as in the case of the East

African pastoralists, where the wealthy with larger herds see it in their interest to impose conservation rules that might be counter-productive for individuals with smaller herds (Lore M. Ruttan and Borgerhoff Mulder 1999).

Within collective action, the institutional entrepreneurs as ‘dominant actors’, or elite capture within group hasn’t been examined in detail for two main reasons. *First*, elite domination isn’t always observable and can evolve over time, affect cognitive behaviour of individuals in subtle ways (Li Donni and Marino 2020). They can play an important role in swaying the socio-cultural norms within a group, these interactions however aren’t always explicitly visible (Abrutyn, Van Ness, and Taylor 2016). *Second*, we do not have enough evidence about the entrepreneurs, because heterogeneity within action situations might not have been adequately diagnosed. There is evidence that the application of the theoretical approaches consider the group or the community as a whole as their unit of analysis, and the communities are assumed to be small, homogenous, with shared norms (Wang and Chen 2021; Agrawal and Gibson 1999). This approach completely overlooks the intra-group differences in cooperative behaviour introduced by heterogeneity, which makes it difficult to measure the presence of elites and entrepreneur actors.

Repeatedly scholars have noted the need for a contextual analysis of the collective action situation with greater attention to the role of the elites and the institutional entrepreneurs and the intra-group multiplicity and heterogeneity (Veldwisch et al. 2019; Lore M. Ruttan 2006; Singleton and Taylor 1992). These themes will be discussed further in the following sections.

4.3. Context and the limits to institutional mediation

The novelty of collective action situations is that the preconditions—of trust and incentive/costs—can be negotiated and discussed in the action situation. However, collective action doesn’t occur in a vacuum, the larger socio-political, historical context matters. Context has increasingly received higher prominence within the theoretical frameworks where the action situation is analysed within nested layers of interlinked action areas, each with its own set of similar or distinct actors (see Chapter 3 for further elaboration). When groups are formed in situations with pre-existing heterogeneities, are there limits to the institutional mediation effect? Although this hasn’t been widely examined, there are evidence that indicate that the institutional mediation has its limits.

As noted by Schultz et al, (2007), when groups have pre-existing social norms, the response to the norms guiding cooperative behaviour can vary—the effect need not be negative. Even when they are expected to reduce trust, and alter the costs-benefit, institutions can have mediating role in homogenising preferences. They can do so by either compensating for the heterogeneity (Varughese and Ostrom 2001) or minimising impacts of heterogeneity (Gibson and Koontz 1998). However, when adversity hits, heterogeneity of actors expressed in terms of social capital, trust, reciprocity, can change and with it the mediating effects of the institution and action situation can be altered. This outcome although significant for collective action, hasn’t been examined in detail.

For instance, Behera (2023) examined the role of social capital in shaping collective action during the event of a disaster (flooding). The author bases their analysis on the fact that communities with socio-cultural and economic homogeneity are shown to share high levels of bonding capital, and heterogeneous communities share linking capital. When disaster strikes, the presence of bonding capital ensured solidarity and altruism—the members were

engaged in rescue, rehabilitation, and recovery irrespective of the cost. However, in the community with high linking capital, the support extended to community members depended on their proximity to persons and institutions in power and authority (see Behera 2023 for further details about the disaster response context). This also indicates that institutions are not able to always compensate for all interactions of heterogeneity. A similar logic is presented in other disciplines as well, heterogeneity (or diversity) is believed to potentially influence a groups' ability to successfully cognitive tasks that involve problem-solving (Pelled 1996).

The narrative on the influence of pre-existing social capital in situations involving externalities can be extended to ICAs. This can be used to argue that when faced with adversity in terms of the availability of the collective good, or a conflict situation, the type of social capital within the group might influence the response. Scholars have noted an ambivalent effects of social capital when looking at cases of (un)successful ICAs (Crespo, Réquier-Desjardins, and Vicente 2014). Repeatedly, empirical studies within commons literature note that while institutions can help mitigate or moderate the effects of heterogeneity, this should not negate the need for greater attention to the contexts within which the institution was established (Hayes et al. 2019; H. C. Komakech and van der Zaag 2013). Although a consensus doesn't exist, scholars have noted that social capital can sway the actors in the action situation to engage in cooperative behaviour, but might also lead to clannish behaviour, elite capture, which would lead to a failure of the collective action, more on that in the following section.

Another aspect that hasn't received much attention has to do with social solidarity—the glue that binds societies, facilitates cooperative behaviour and collective action among its members. The concept of social solidarity⁵ has been applied to contexts where collective action is needed to deal with contentious issues,⁶ or a society's response to crisis (see (Mishra and Rath 2020) for an analysis of social solidarity and collective action during the COVID-19 pandemic). Pertinent to the context of collective action, a few questions remain unanswered.

- i) In heterogeneous groups (where Durkheim's mechanical solidarity might not be present), can the institution help in fostering solidarity?
- ii) In the face of uncertainty, or externality, could social solidarity help in mitigating the negative impacts of heterogeneity?

For instance, imagine a forest user group with economically heterogeneous members faces a loss of 60% of its resource base due to flooding. Here, in the presence of social solidarity, could the rich users (who are within the institutional framework entitled equal claim to the resource) forsake their claims so the scarce resource becomes available to those who are more dependent on it? This is an interaction that hasn't be measured within the context of collective action, but could help better understand the institutional mediation roles, and the overall dynamic of heterogeneity and collective action.

⁵ Sociologist Emile Durkheim, a classical proponent of this topic, in *The Division of Labour in Society* (1964) introduces the concept of mechanical solidarity (seen in small scale localized societies with limited division of labour) where the solidarity stems from the members sharing similar values, common life experiences. However, as societies get more specialised, the similar experiences diverge, and new form of solidarity is formed—organic solidarity. Here, the society members are dependent on each other within the division of labour, and a level of cooperation is observed (Durkheim 1964).

⁶ How groups react to divisive issues, are there inter-group differences has been a topic of interest within behaviour and psychology studies. For example, the concept of collective narcissism within interest groups (like women, men, heterosexuals, etc.) was examined in an experimental study about solidarity-based collective action of these groups in issues of abortion ban, refugee related issues (Górska et al. 2020).

In the earlier sections, I have discussed heterogeneity in relation to the outcome of successful collective action. However, heterogeneities in the context can introduce limits to the mediating role of the institutions. Within collective action and across disciplines, scholars have been increasingly interested in the processes that lead to the cooperative behaviour, and also whether these collective arrangements are sustainable or socially just. In the following sections, I discuss how pre-existing heterogeneities influence the institutional negotiation process and the potential limits to the standardisation capacity of institutions. When the processes leading to cooperation are introduced in the analysis, or when the action situation is viewed over a continuum, the contingents introduced by power and intersectionality become relevant, this will be discussed in the following chapter.

Chapter 5: Establishing and Continuing Collective Action

When we move beyond the minimum conditions required to establish collective action, into the process of initiating the cooperative behaviour, its evolution over time, a more dynamic view of heterogeneity is required. Here, it is important to examine the how heterogeneities influence the pre-existing context within which the negotiation for collective action takes place. What types of heterogeneities exist? Are they reproduced in the collective action situation? Do they impose limits of the institutional mediation effect? Is the process of establishing the institution, and the overall operation that of a just, democratic, and equitable institution? This can be answered with a more nuanced and dynamic view of heterogeneities. In the following sections, I will assume this dynamic view of heterogeneity and relate it to the institutional negotiation process, and the larger context.

5.1. Heterogeneity and the institutional negotiation process

Negotiation in formal and informal institutional spaces

In earlier chapters, I discuss how institutions are created, the negotiation processes that enable trusts and reciprocity, balance costs, and more among these actors. However, the negotiation is a continuous process that happens both formally and informally. Within the theoretical frameworks, the introduction of interlinked action arenas, and the linkage of action situation to multiple other systems reflects on this. Empirical studies too confirm that the negotiation for cooperative behaviour can be conducted in both formal and informal institutional spaces. For instance, Komakech and van der Zaag (2013) while analysing the collective watershed management of river basins in Tanzania among socially and economically heterogenous actors show how although the formal institutional rules demarcated the rules and condition for collective action, these actors negotiate informally. In this case, rich institutional actors with power and legal claims on the water resources were shown to be sensitive and tolerant to the existing customary arrangements and needs of the community. Closer inspection revealed that the institutional actors wished to capitalise on the support and trust established through water-sharing in other kinds of labour relations (H. C. Komakech and van der Zaag 2013). Here, although heterogeneity didn't hinder cooperative behaviour, the cooperation was contingent on the incentives of the rich actors within other action situation. Hence, even when institutions are able to offset for the heterogeneities, in contexts with high levels of heterogeneity, the cooperative behaviour can be negotiated (non)coercively in other informal spaces. This further emboldens the need to give a higher prominence to analysing the nature and extent of heterogeneities in pre-existing groups.

Heterogeneous power among heterogenous actors

How does existing heterogeneities in power (introduced by sociocultural or economic heterogeneity) influence the institutional negotiation process? Do institutions for collective action perpetuate existing differences in power relations? Do they create 'new' institutional entrepreneurs with heterogeneous power? Early scholars when examining the common traits within the most successful cases of collective action, scholars notice symmetrical distribution of power within actors (McGinnis and Ostrom 1992). Power within the social sciences is considered as a significant factor influencing people's behaviour. In democratic collective action situations, where the basic tenets arise from equality, and sense of trust and reciprocity among the actors, how does pre-existing power influence the balance becomes an important topic. While there is growing recognition regarding the significance of power in these contexts, there is ambivalence among scholars regarding the role of power, and the ability of institutions to mitigate the (un)symmetry in power.

Studies have repeatedly shown that there are higher than expected level of cooperation, even when the larger context is marred with power asymmetries (Kashwan 2016). Here, the democratic aspect of collective action might not always have the anticipated equalising effect (Kashwan 2017). For example, in the analysis of protected areas in a global sample of 137 countries, Kashwan (2017) notes that the strength of democracy at the national and regional level is relevant—in democratic countries (absence of coercive means), inequality introduced by social and economic heterogeneity is directly related to the varying levels of outcome in collective behaviour whereas, in relatively undemocratic countries, inequality didn't matter as much. A key implication here is that when 'coercion' is not a possibility, individual's behaviour and collective action is directly linked to their perceived costs, benefits, the institution (as discussed in 4.1). In addition, dominant actors in democratic and non-democratic regimes can have differing levels of power—democratic regimes are expected to have more transparency, and checks on power—and hence, in the seeming 'successful' ICAs, there is a risk of the effects or drivers of inequality not being visible.

For instance, a similar interplay of heterogeneity and power has been noted in the context of water resource management in the Aracataca River Basin in Colombia, where the historical management of water has been a contentious issue that involved frequent conflicts between individual and collective interests. Here, the processes and outcomes were greatly shaped by the power asymmetries and heterogeneity between actors (Fonseca-Cepeda et al. 2022). When integrating the earlier discussion on the coercive power of elites, and actors with dominant influences, power becomes an important variable that is introduced as a result of heterogeneity, and as a result of context. The empirical studies discussed here establish a critical fact that heterogeneities expressed through power, inequality can work across and shape individual behaviour across multiple action arenas.

Contemporary studies and theory doesn't elaborate much on this interaction of heterogeneity of power and collective action (see Kashwan et al. (2021) for the most recent stock-taking of existing scholarship on commons and inequality). This has also been confirmed by a recent comprehensive review of the empirical studies on collective action for resource management (Barnett et al. 2020). In general, the studies on collective action do not address power and trade-offs and assume that the benefits of successful collective action would apply evenly to all social groups involved in the situation, we know this might not be true. Also, as mentioned earlier, the nuances of trust, power and their interplay with heterogeneity is missed because most empirical studies assume the group/community as a homogenous unit of analysis (Agrawal and Gibson 1999).

5.2. Overlapping heterogeneities

So far in this study, I have summarised the discussion on collective action that look at situation where attributes that introduce heterogeneity is analysed as a binary condition—it can either be present or absent. However, overlapping heterogeneities are possible, they can be present when an individuals' demographic attribute, say gender, is intersected with their cultural norms. Within commons literature, as there isn't much discussion about the individual determinants of heterogeneity to begin with, the concept of overlapping heterogeneities has been largely overlooked. The few studies that do consider the interaction will be discussed in this section (Maiorano, Thapar-Björkert, and Blomkvist 2022; Kashwan et al. 2021; Mudliar and Koontz 2018; Sundström et al. 2020; Tagliapietra 2013). To complement this discussion, here I introduce the insights from other disciplines about intersectionality and faultlines.

While analysing if people behave differently solely based on their demographic, social, and cultural background makes analysis easier, it doesn't exhaust the underlying drivers of heterogeneity leading to this discrepancy. This has been shown by a recent behavioural experiment conducted by Sundstrom et al., (2020). The purpose of the experiment was to interrogate whether there are gendered differences in people's pro-environmental behaviour. Initially, the study reveals that women's attitudes don't generally diverge from men's. However, if the woman's attitudes are disaggregated by their relation to the environmental resource and income level, there are significant differences (Sundström et al. 2020). Here, gender differences matter only when intersected with economic heterogeneity. Similar dynamics have been noted by field-based study about collective action in the Eastern Gangetic plains in South Asia reveals that "unequal gender relations intersected by class, age, ethnicity and caste, are reproduced within collective action situation" (Leder et al. 2019).

When we introduce dynamism in the action situation—to consider how heterogeneities shape and are shaped by the interlinked action arenas, overlaps become more important. For instance, within forest management discourse, because women play key role in collecting and using basic household utilities like food, water, fodder, etc., studies give women prominent recognition as the institutional entrepreneurs and initiators of collective action (Leder et al. 2019; Clement et al. 2019). However, the analysis of whether this prominence of women translates to them having equal/higher access to decision making power, whether this allows them to access social capital across the social life, and more is missing. Here, analysis of gendered behaviour that intersects the gendered identity, with power, accessibility within and beyond the action situation would help paint a more complete picture of this situation.

Prominence of similar conceptualisation of overlapping heterogeneities can be seen in other disciplines. For instance, within management literature, intersectionality is perceived as faultlines. Faultlines are defined as the hypothetical dividing lines that split a group or team into two or more subgroups based on one or more individual attributes (Budovitch 2016). Faultlines are analysed in relation to their role in influencing the socio-structural context and shaping individuals' perceptions (Bowleg and Bauer 2016; Veltrop et al. 2015). These influences change over the course of the lifespan of the group (see Lau and Murnighan 1998; 2005). In particular, Veltrop et al., (2015) show that when groups have strong and pre-existing faultlines, the mediating and equalising effect of the institutional design in guiding behaviour might not be as effective. In doing so, this study introduces the concept of threshold effect of faultlines—when do differences start to matter. Within collective action, a similar study has looked at the interplay of heterogeneity and size in creating a threshold effect for collective action (Tagliapietra 2013). However, what combinations of overlapping heterogeneities matter in the collective action situation? This remains unanswered.

5.3. Caste heterogeneity—where every form of heterogeneity comes to play

As mentioned in earlier section, heterogeneities overlap—it can be observed in all types of social and group settings. Even in seemingly homogenous Western societies, there are heterogeneities caused by income levels, racial background, etc. Since the empirical case studies that informed the leading frameworks for collective action (see Ostrom's work in *Governing the Commons*) are informed by empirical evidences in South Asia, and other countries in the Global South, I consider it worthwhile to examine the case of caste heterogeneity as a topic where multiple types of heterogeneities overlap. This is not to negate the fact that the overlaps of heterogeneities don't happen in contexts with ethnic diversity and other forms of social categorisation. However, caste is emblematic of the key context—the

South Asian societies—where collective action takes place. Examining how caste heterogeneity has been analysed within these contexts can help establish the reference point for future research on this interaction.

Caste relations are systems of social categorisation that is practiced in South Asia, and is a system strongly guided by the notions of purity and superiority (Mudliar and Koontz 2018). Mobility within the caste groups is not possible, and an individual is born into the caste they belong to. Intermarriage though possible, is heavily shunned upon, and the children born out of these relations assume a lower caste. Traditionally, people could access education and job opportunities based on their caste—hence, structural barriers to entry were in place for decades to prevent the entry of people from lower caste. The manifestation of this system today is seen with contentious relationship between the different caste groups, and the massive differences in the socio-political accessibility and representation, economic status of these groups (Maiorano, Thapar-Björkert, and Blomkvist 2022; Kashwan et al. 2021). While exceptions exist, higher caste people are generally the social elites, have substantially higher access to the socio-economic and political capital within the community. Early analysis of caste relations in the context of collective action uses the caste-based categorisation to group communities into homogenous sub-groups. But, when we analyse the historical and contextual subtext behind the caste system, it is evident that caste has influences beyond just creation of sub-groups. In a way, caste system is where all the factors—of trust, norms, social capital, power, intersectionality come to play.

Yes, institutions, the rules of the action situation can have a mediating role in this arrangement, but the contrary can also be true (Ray and Bhattacharya 2011). See Box 1 for a discussion on how weak actors (those from lower caste) participate in the collective action situation when the broader system in which they are embedded in continues to disadvantage them. Studies have shown that where these inequalities and historical and structural disadvantages for specific groups exist, the relations and status-quo is constantly being negotiated and re-negotiated. This is where justice-based approaches, equity measures fit into the discourse of collective action (Andriollo et al. 2021; Delgado-Serrano and Ramos 2015; Colfer, Elias, and Jamnadass 2015).

However, the negotiation process is subtle, non-confrontational, and like in the case presented in Box 1, the negotiation process can reach a saturation point where pervasive inequalities and heterogeneities continue to persist. Mudliar and Koontz (2018) provide key empirical evidence to substantiate the complex nature of caste, and the limitations on the mediating role of ICAs to reduce impacts of heterogeneity. As long as the outcome of collective action, or sustainable institution is concerned, the watershed association presented in Box 1 is a successful case. However, when the ‘equality’ of the institution is put into test while accounting for the entrenched inequality, and power asymmetries created by the caste system, these institutions aren’t truly egalitarian. Here, similar to what Kashwan (2017) reported in their study, the collective action is not coercive, there isn’t any report of overt elite capture, clannish behaviour, or inter-caste conflict. One can doubt these institutional conditions on ground of equity, or social justice.

The anomaly is explained when the unjust system is analysed with the interlinked action areas. Weaker actors, especially those that have always been historically and structurally marginalised, value access to stronger actors and opportunities that traditionally people from their background wouldn’t be allowed into. This is the mediating role that carefully crafted institutions for collective action, and heavily moderated action situation can play. The

mainstream analysis of contexts with these forms of overlapping and complex heterogeneities fail to address these nuances. Both caste and ethnic heterogeneity has been noted as an important factors that influence intra-group relationships, trust levels, and transaction costs, analysis is often simplistic (Waring 2011; Dash and Behera 2015; Ray and Bhattacharya 2011).

Leaving caste behind in collective action situations

Mudliar and Koontz (2018), analyse how the heterogeneities introduced by India's pervasive caste structure plays out in community-based institutions. The groups analysed by the authors were externally created by a non-profit organization, Mysore Rehabilitation and Development Agency (MYRADA), in 1991 as part of a watershed development program in South India. The watershed association would also qualify for the government-subsidized loans for self-help groups. Initially, the deeply rooted norms of caste untouchability hindered group formation. The challenge "was to convince the Lingayats, a politically powerful and wealthy caste, and the Scheduled Castes (SCs), a historically marginalized caste, to participate in the program together". Over the years, the watershed association had created strict rules like exclusive membership, inclusive decision-making, impartiality, rotating leadership positions, separation of power to promote collective action by establishing perceptions of fairness, equity, and accountability.

When a new farmer from a higher caste wanted to join the watershed association, the group collectively revisited the rules for membership. New membership was allowed, under the condition that they pay a membership fee and a deposit upfront. There were mixed reactions among the group members about the cost of entry into the group—some said it will make entry harder. Also, the collective group lending provision was contentious among the group members. Despite their heterogeneities, the group members from high and low caste had learnt to trust each other over the years. The presence of the institution had softened the contentious and confrontational relationship between the Lingayats and SCs and contributed to a sense of shared symbolic capital among the members. In a way, within the group, the members seemed to have overcome the rigidities of caste system, they behaved like equals.

Life beyond the association however continued to serve the status quo. The norms of untouchability persisted in the village life, the SCs participating in the study shared that they caste continues to shape feelings of powerlessness—they are also hesitant to speak up during meetings. The institution had not been able to completely subvert the socio-cultural conditioning and norms, traditions that stem from the caste system—the Lingayats and SCs are not 'truly equal'.

Why does collective action continue to occur? The benefits of cooperation are valuable for both groups—they work together to avail government schemes and group subsidies, and work with local governments to improve local infrastructure. For the SCs the benefits also have to do with their individual capabilities and image. Through proximity to the Lingayats, and access to local governments, these SCs repeatedly found them being involved in tasks and social spaces where they are historically not welcomed into. For instance, SC members from the association have access to local government meetings, they sometimes are invited to provide training to other farmer groups.

Box 1: Caste heterogeneity and collective action, adapted from Mudliar and Koontz (2018)

The arguments of the complex, overlapping and obscured nature of caste heterogeneity can be extended to other seemingly 'homogenous' communities as well. Access to power centres beyond the ICA under consideration, historic inequalities and injustices exist in every society in our world. Here, the key takeaway is that heterogeneity can be a key institutional parameter that can exist within and beyond the collective action situation, which when unexamined might exert influences beyond the mediating effect of the institution.

5.4. Revisiting the conceptualisation and measurement of heterogeneity

So far, I have presented the multiple arguments for an expansive and dynamic view of heterogeneity within the collective action situation. Here, I revisit my previous research which was conducted in 2016 on community-based forest resource management in national parks of Nepal for two purposes:

- i) Reconcile the unanswered questions from the previous research, and explain how (re)examining heterogeneity could help in addressing them
- ii) Present a case for the utility of examining heterogeneity with a longitudinal and macro-micro-macro perspective

Historic evolution of forest management in Nepal

Natural resource management in Nepal was historically done through indigenous systems where the consumption of resources was channelized through traditional community-based organisations of these indigenous groups. In tandem with global practice, forest resources in Nepal were nationalised around the 1950s. However, the nationalisation wasn't successful in protecting forest resources, because the land-use system of *Birta* created perverse incentives for local communities—they could clear out forests and register the cleared land as private property as per the prevalent rules (Chhetri and Pandey 1992). Also, nationalisation disrupted pre-existing traditional practices of communal resource management (Varughese 1998).

Upon evaluating the effectiveness of nationalisation, and the resistance from community, the forest resources were soon decentralised and gradually handed back to the community. Here, Nepal swiftly went from a fairly unregulated yet decentralised structure to a highly regulated centralised management structure to a regulated decentralised structure. In doing so, the government of Nepal initiated the Community Forestry Development Program in the decades of 1980s. A considerable amount of Nepal's land were converted into protected areas for conservation, management, and utilisation of natural resources.

The Context—Buffer zones

Initially, national parks were completely shut-off protected areas—the ideology behind these national parks was that the ecosystem was to remain undisturbed with no human activity allowed within the protected area. This led to the displacement of multiple communities that previously resided in territories within the national park, and also multiple households lost access to natural resources that was crucial for their livelihood. It soon became clear that the protected areas need to allocate areas where people can consume resources in a sustainable way. Hence, buffer zones—the peripheral area of a national park or reserve—were established to allow local people to use forest resources in a regular and beneficial basis (Government of Nepal (GoN) 1973). Subsequent laws and regulation for the management of buffer zones were developed.

Micro-perspectives—users and user groups in the buffer zones

The users in buffer zones formed user groups, which as elaborated in Paudel (2016) are institutions for collective action. The user groups are formed at forest level with adult representatives from each household, and they were all part of buffer zone user committees (that functioned as an ICA, involved in decision making regarding the operational rules).

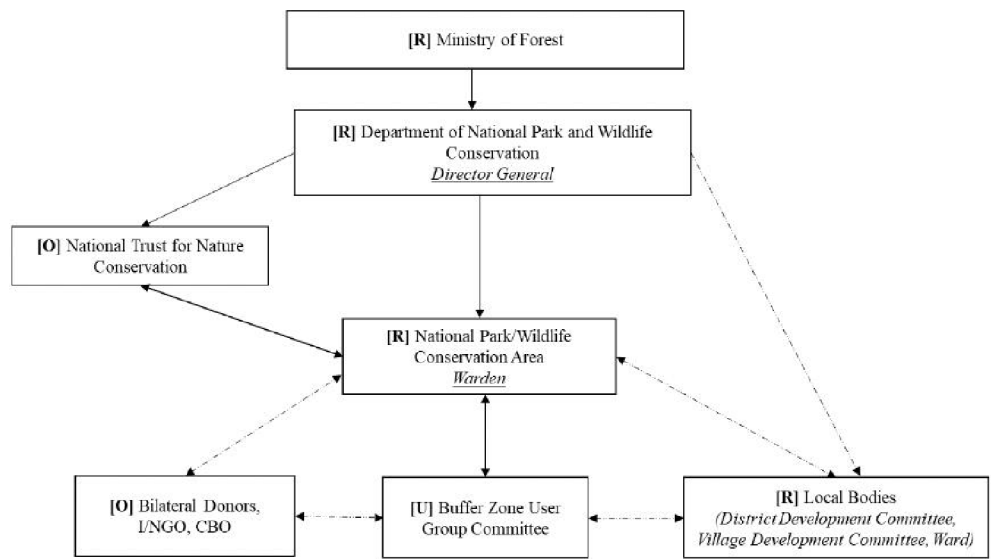


Figure 3: Actors for management of buffer zone forests in unitary Nepal

Source: (National Parks and Wildlife Conservation Act 1973, 1973; Buffer Zone Management Rules, 1996; Buffer Zone Management Guideline, 1999)

On a macro level, the management of buffer zone forest resource in Nepal looked as follows. The solid arrows show the regulators (R), users (U), other actors (O) and their direct hierarchical relationship. The dotted arrows show the informal relationship and feedback channels when it comes to the management of forest resources in buffer zones.

Here, a key question related to heterogeneity remains unanswered. Nepal is a country with high levels of sociocultural and ethnic diversity—the country has more than 125 caste/ethnic groups (Ministry of Foreign Affairs Nepal (MOFA) 2023). These groups are heterogeneous in terms of their economic status, political representations, and some of them have been historically marginalised in other social aspects of life. Against this backdrop, **are there specific groups particularly disadvantaged within the current forestry regime?** While studies like Varughese and Ostrom (2001) elaborate on the institutional mediation and equalisation strategies adopted by the heterogenous groups, the questions of power, influence of heterogeneity in interlinked action arenas haven't been examined in-depth. **Issues of intra-group equity and inclusiveness has been raised by scholars in the field time and again.** The decision making power and redistribution of benefits in these groups have repeatedly shown to be unfavourable for Dalits and poor households, and people from indigenous communities (Raute, Sonaha, Bote, Majhi, etc) (Paudel 2016; Sapkota, Keenan, and Ojha 2018; Lund et al. 2014).

Macro-perspectives—larger governance changes, and subsequent trickle-down effect on forest management

Understanding the pre-existing micro-level discrepancies and interactions of heterogeneity in Nepal has become even more important because, Nepal recently underwent a macro-level change in its governance structure. In 2015, Nepal's larger governance structure transitioned from unitary system to federal system for multiple reasons; for a decentralised state structure; contextualised development that is responsive to the diverse need of Nepali population. Post-federalism, Nepal's buffer zone management regimes looks as shown in figure 4.

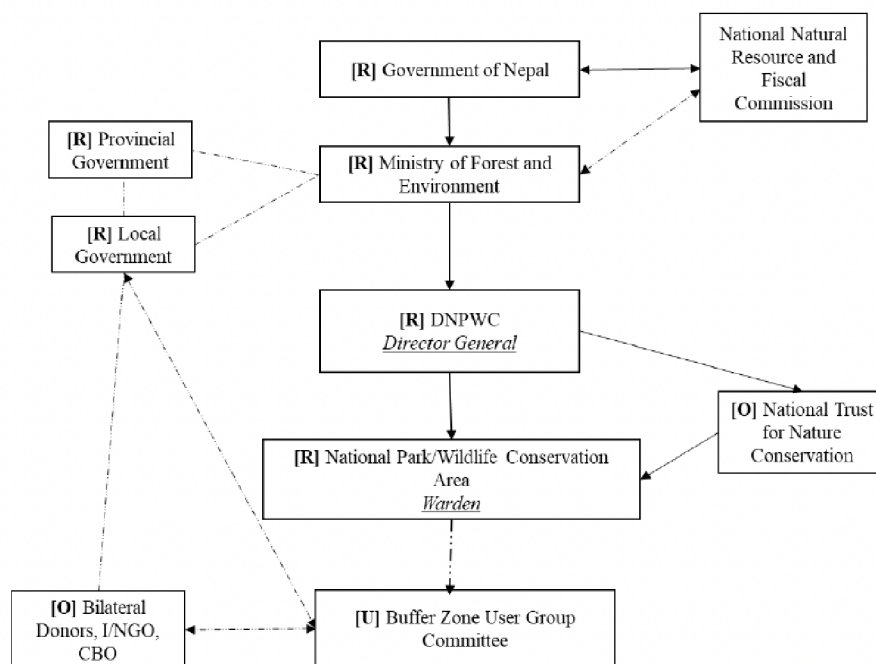


Figure 4: Actors for management of buffer zone forests in federal Nepal

Source: (National Parks and Wildlife Conservation Act 1973 (Fifth Amendment), 1973; Buffer Zone Management Rules, 1996; The Constitution of Nepal, 2015; National Natural Resource and Fiscal Commission Act, 2017; Local Government Operation Act, 2017; Intergovernmental Fiscal Arrangement Act, 2017)

Federalism has created new actors, with new mandates in the context of forest management in buffer zones as shown in figure 4. However, as noted in Paudel (2016), the jurisdictions, functions, powers, and duties of the federal units in relation to the buffer zone management is unclear.

Nepal's forest resource management regime (even before federalism was adopted) has sometimes been questioned for its 'democratic nature' (Basnyat et al. 2018). Here, the scepticism of the democratic decentralisation of the management regime stems from a similar line of thinking as reflected in Kashwan (2017). **Are participatory regimes masking the existing inequalities in these resource management regimes?** Are there cases of elite capture? The questions remain valid, because on a macro-scale, **Nepal is still trying to reconcile its vast socially exclusionary structure**: a key driver for adoption of federalism was to better contextualise these requirements of the citizens, the discourse on a national scale are centred around better access, representation, and decision-making power to its disadvantaged citizens.

Micro-perspectives—Converging heterogeneity with resource and size

Two major evolutions have taken place in Nepal over the past three decades. *First*, Nepali people have shifted from primarily agrarian occupations—the employment in agriculture sector has seen a decline from 81% in 1991 to 62% in 2021 (International Labour Organisation 2021). Intuitively, the community's relationship with the forest resources must have changed—since farming is more dependent on natural resources. How do we ensure inter-generational continuity of the collective action for forest resource management? In order to better answer these questions, a better understanding of how the shifts have taken place needs to be answered. **Have all demographic groups equally shifted away from**

agriculture? Are there particular groups with persistent dependency on forest resources? Has this had implications on the size of the forest user groups?

Second, Nepal's population, and with it, the urban population is growing—more than 20% of the population now lives in urban areas. This has also coincided with increased reported cases of human-wildlife conflict. **Are there specific groups that are persistently facing increased human-wildlife conflict? Who are the people that dominantly live in urban centres, and has their dependency on the forest resource changed?**

Finally, the questions raised in the earlier section are not exhaustive, they are also context specific. However, they do present the narrative of how, even within an established successful regime of forest management in Nepal has many unanswered questions—most of which have to do with the heterogeneity of its ICAs. **In addition, if the macro-level changes in the governance structure were necessitated by the need to contextualise governance and development to the heterogeneous population further reinforces the need to re-examine these 'democratic' regime.** Here, understanding who has access to what types of social, economic, and political resources can be of paramount significance. This further proves that although heterogeneity might not be the only factor influencing people's cooperative behaviour—it most definitely is a key contextual variable.

Chapter 6: Conclusion and Discussion

In this study, I have presented concrete evidence to claim that heterogeneity is an important contextual factor. Heterogeneity is multi-layered and can influence the underlying conditions that enable cooperative behaviour. Inherently, heterogeneity can create good or bad outcomes in the action situation. When we consider the historical and contextual drivers of heterogeneity within multiple overlapping action arenas, inequalities in power, access might be present. The inequalities can be subtle reproduction of the larger social context, or a new creation. However, we do not have enough evidence to inform a unified and comprehensive theory of how and under what conditions heterogeneity of actors influences cooperative behaviour. Although sporadically the empirical studies have reported on the complex and layered nature of heterogeneity, this study confirms that heterogeneity and its dynamic nature hasn't received the level of attention it demands. In the following sections, I summarise earlier discussions about the theoretical conceptualisation empirical measurement of heterogeneity.

6.1. Theoretical conceptualisation of heterogeneity

Let us begin at with the theoretical frameworks—these frameworks have been envisioned as tools to assist scholars to ‘organise the diagnostic, descriptive, and perspective inquiry’ (Polski and Ostrom 1999) and to ‘develop a coherent mode of analysis to apply to complex, nested systems operating at multiple scales’ (McGinnis and Ostrom 1992). The design principles remain silent on heterogenous actors and elaborates at lengths about creating institutions that can help actors with heterogenous costs/benefits to overcome a social dilemma situation. Succeeding theoretical work on the topic have been regularly updated to integrate the contextual and institutional factors that can shape the dynamic nature of cooperative behaviour (see more in Chapter 3, pg. 7-12). These include the different attributes of actors that influence their collective behaviour. However, all the theoretical frameworks are particularly silent on the dynamic nature of heterogeneity—of how sociocultural and economic heterogeneity can be overlapping, how they can influence the norms, trust and social capital, power, etc that shape interaction within the action situation. The theoretical frameworks seldom include the heterogeneity present in the context as a factor that shapes the negotiation processes that establish the institutions for collective action. This explains why the database mostly used by scholars studying collective action (including Elinor Ostrom herself), the Common Pool Resource database, has a lot of missing data. 28% of data related to the traits that can be linked to heterogeneity (Van Klinger and De Graaf 2021). However, this oversight can also be a result of how success is defined within the collective action situation.

6.2. Empirical measurement of heterogeneity

The empirical measurement of heterogeneity is what prompted this study. There are few studies that explicitly look at the influence of heterogeneity of actors in the collective action situation, and they show mixed result. However, this study confirmed a few very important aspects that can inform future empirical studies focused on collective action and beyond.

First, even when heterogeneity is given more interest within the action situation, the complex interplay of factors discussed in the earlier section might not be evident if the timeframe of analysis is fixed, or based on a short time—their impacts often don't materialise immediately (Ortiz-Riomalo, Koessler, and Engel 2023). As seen in Mudliar and Koontz (2018), and Kashwan (2017), certain inequalities, differences created by heterogeneity can be observed

only when certain triggers are in place. A longitudinal or evolutionary approach to analysing collective action is needed (see De Moor et al. 2016 for an extended discussion of this approach). For instance, while analysing the evolution of collective action within the well-recorded case of lobster fishing and fishery management over multiple decades in Maine, USA, Cole et al. (2019), introduce some discussion on the issue of heterogeneity and power. This study discusses how heterogeneous actors (in terms of their interest with the resource) use their different political power to influence legislation that regulated the conditions under which collective management of the fishery occurred. Although it falls outside the scope of my study, the analysis of Maine lobster case is interesting to see the evolution of action situation over time. When heterogeneity of actors and/or resources is introduced, even within the successful and democratic management regime, heterogeneity can introduce contingents relevant to other interlinked action arenas. Here, the longitudinal approach will permit the inclusion of the adaptations, and evolution from the interlinked action arenas. Also, it will create a more holistic understanding of how institutions (organisations) with heterogeneous actors adapt, evolve over time. Whether the institution has feedback, and mitigating effects on the heterogeneities, whether it creates new heterogeneities, these are questions that can only be examined in a longitudinal approach. **Here, longitudinal studies will allow the dissection of the contexts of successful ICAs, the entry and interaction of heterogeneous actors, the powers and access with respect to other interlinked action arenas.**

Second, diagnosing heterogeneity, take a lot of time, effort, and trust building, and even then, the combinations of heterogeneity are endless. Here, the costs involved with exhausting these factors can be high (Agrawal 2003; 2001). Additionally, the empirical evidences are scattered across a range of small-N case study to large-N case study—each have their own geographic focus, define outcome arbitrarily, and have different units of analysis (see Lambert et al. 2021; Ortiz-Riomalo, Koessler, and Engel 2023 for more elaboration on the distribution of empirical studies on collective action). This makes generalisation of the role of heterogeneity harder. **However, this study presents concrete evidence that heterogeneity is a key contextual variable that deserves greater attention within the domains studying cooperative behaviour.**

Throughout the study, I refer to literature outside the domain of commons, especially those in behaviour science and management. As has been noted earlier, within these disciplines, heterogeneity expressed as diversity is shown to be an important contextual factor influencing individuals and group behaviour—gaps and ambivalence exist in the framing and measurement of the interaction. Studies have noted that diversity within management literature is stringently defined, focusing mostly on western-centric group contexts, and the contexts where diversity isn't multi-layered (Jonsen, Maznevski, and Schneider 2011). A review of diversity management literature published in the past three decades confirmed that majority of the studies were conducted in developed countries, most of them were published around a similar time and since then have been in decline, and only certain topics, of age, gender and racial diversity was discussed (Yadav and Lenka 2020). Here, research and practice focusing on the context of marginalised communities where multiple layers of heterogeneity operates, in non-Western countries is essential and can broaden the scope of diversity management across contexts (Sparkman 2019). Intersectionality has also been noted as an important and emerging issue for properly contextualising diversity management. While it is true that individuals are increasingly likely to embody intersectional identities, the criteria based on which the dimensions of diversity are differentiated and prioritised also becomes important (Kölle 2021).

Why do these convergence points in the literature matter? *First*, human beings play multiple roles within societies. Leaders in a workforce can be members in a mutual cooperative, and the vice versa might be true. Cooperative behaviour forms the foundations of most formal and informal institutions that drive society. The fact that scholars across different disciplines time and again have repeatedly come back to the topic of heterogeneity and the differences created by them reinforces the fact that a better understanding of how these factors evolve is required. *Second*, the ambiguous and ambivalent effect of heterogeneity noted in different institutional and experimental contexts confirms that institutions might not have as much a mediating role as we expect, and that manifestations of heterogeneity are difficult to measure. The value of analysing these interactions within the collective action literature is because of the peculiarity of the collective action situation (Shannon, McGee, and Jones 2019; Ostrom 2000). Although incomplete, the discipline bridges the analysis of conditional rationality of actors in relation to the context, and in doing so, it creates enough space to allow for a comprehensive analysis of heterogeneity.

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Appendix 1 – List of Respondents

1. Professor, specialisation in institutions for collective action and social enterprises
2. Senior environmental journalist
3. Chairperson, Federation of Community Forestry Users Nepal
4. Political economy expert, focus on citizen-driven collective action

Appendix 2 – Interview Checklist

1. What are your perceptions on the conceptualisation of heterogeneous actors in collective action?
2. What are your perceptions on the measurement of heterogeneous actors in collective action?
3. What are the major areas of shortcoming? How could future research better address these issues?
4. Review of existing literature reveals that the measurement of heterogeneity has been static, and simplistic. How can this be rectified?
5. Few scholars note the complexities attached with research in this topic. What are your perceptions on this?
6. The literature review has revealed the ambivalence on the role of heterogeneity in collective action situation. In your field of work, have you come across any explanation for why this might happen? Do you have any reflection on how the ambivalence could be resolved?
7. Are you aware of critical work, research on this theme that should be included in this topic?

Nepal-specific

1. What are your perceptions about the impact of pre-existing heterogeneities in the user groups?
2. What were some of the shortcomings/areas of concern for how buffer zones were managed under the unitary regime?
3. Nepal's larger transition to federalism was in part guided by the heterogeneity in its population. In this context, how do you interpret the heterogeneities in the user groups?
4. What are your perceptions on the changes brought on by federalism with respect to forest management in buffer zones? Please provide your view on the management before/after federalism was adopted.