Sociology and Resource Management
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Module - 02
Natural Resource Management and Different Theoretical Approaches
Lecture - 06
Common-pool Resource management

Welcome to today's class. During last week, we covered the theoretical basics of resource management, more particularly commons and common-pool resource management. We will spend the first part of this week in applying the learnings to empirical cases of both natural and man-made resource management. In today's class, I will discuss four cases pertaining to natural resource management, two related to fisheries and the other two related to forests. As you might remember, Common Pool Resources or CPRs are resources collectively used and managed by a group of people who constitute the resource community.

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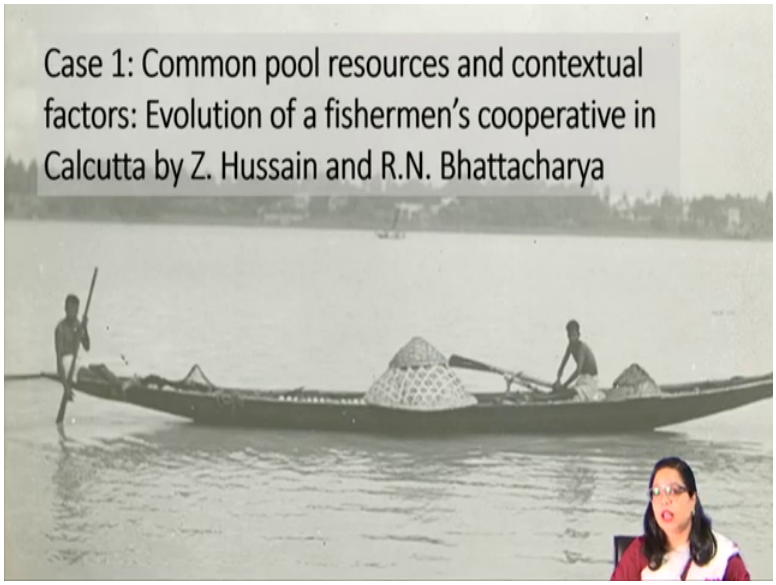

The first case by Zakir Hussain and Rabindra N. Bhattacharya looks at the growth of a fishermen community in Calcutta. They argue that in CPR research, there has been a tendency to ignore contextual embeddedness of a resource.

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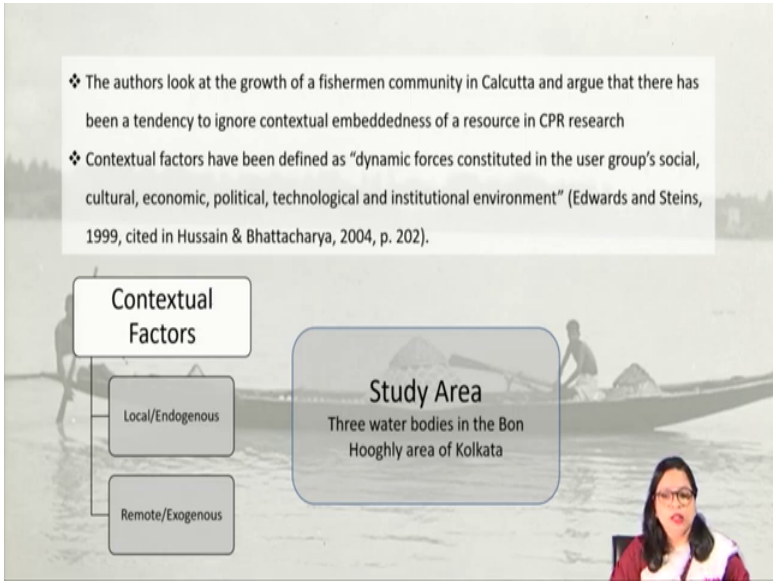

The authors define contextual factors as "dynamic forces constituted in the user group's social, cultural, economic, political, technological and institutional environment". They are of two kinds: local and remote, which are endogenous and exogenous factors respectively.

The case study covers a group of three water bodies in the Bon Hooghly area of Kolkata. These water bodies are managed and used by a cooperative that was established in 1974 by migrants who arrived from Bangladesh.

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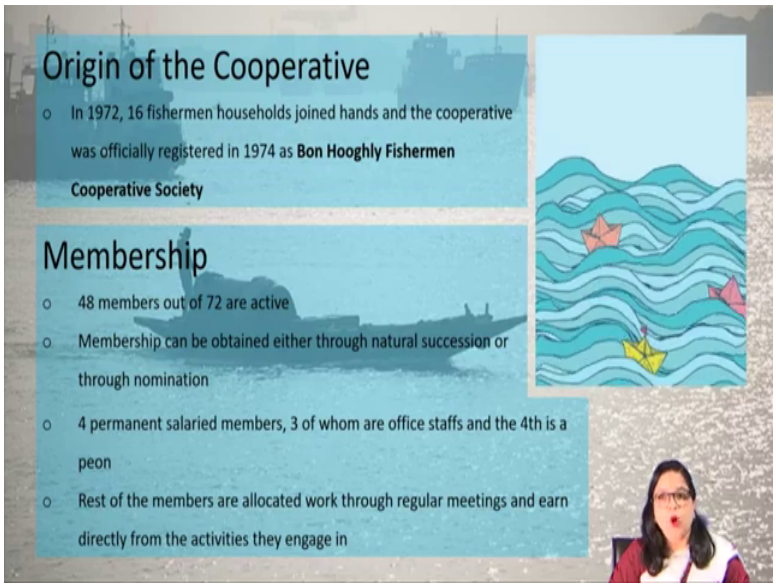

Since 16 of the total households were fishermen by caste, they took the initiative to form the cooperative in 1972 and officially registered it under the name of Bon Hooghly Fishermen Cooperative Society in 1974. Currently, there are a total of 72 members out of whom 48 are active. Membership can be obtained either through natural succession or through nomination.

The cooperative's main activity, as the name suggests, is fishing. However, there are boating facilities as well to supplement the income from fishing. There are four permanent members, three of whom are office staffs and the fourth is a peon. They are the only salaried individuals. The other members are allocated work through regular meetings and earn directly from the activities they engage in.

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There are two such activities. Firstly, there are two teams of fishermen with 12 members each. Secondly, there is the task of repairing the boats and nets, and maintaining the ponds. Sometimes, even the income from fishing and boating are not enough. As a result, members have to work in informal sectors. That being said, the members are eligible to receive a lot of direct and indirect benefits from the cooperative.

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The sustainability of the water bodies is checked in two ways by the members. Firstly, by checking the closing stock or the value of the fish stock at the end of the year. This data, however, is not always reliable as there there is scope for manipulation. The second method of checking sustainability is to rely on direct observation of fishes the changes in physical features of which can indicate overexploitation.

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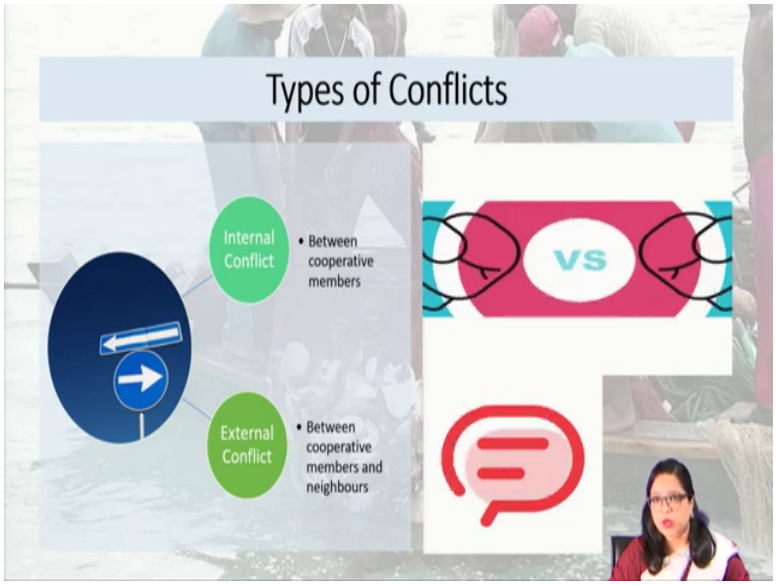

Conflicts are of two kinds when it comes to this cooperative. Internal conflict takes place among cooperative members, whereas, external conflict takes place between cooperative members and neighbours. I will now explain how internal conflict is resolved.

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First when it comes to allocation of work, there is a conflict as to who will undertake which task because the pay is different for each one.

Firstly, when it comes to allocation of work, there is a conflict as to who will undertake which task because the pay is different for each. Fishing brings in more money, for instance. This conflict is solved by using a system whereby tasks are assigned on a rotational basis. So, person A goes fishing one day, and then takes care of the boats on another. Sometimes when that does not resolve the conflict, the executive council's arbitration becomes necessary.

The second internal conflict arises when people shirk from their responsibilities and tasks, that is, they refuse to do their work. In some situations, the person gets away with it if there is a secondary job involved. However, there is a certain threshold that must not be crossed failing which, actions are taken against the rule-breaker.

Now let's look at the external conflicts and how the cooperative solves those. The first external conflict is that of poaching in the form of non-members stealing fish from the

water bodies. To make sure this does not happen, guards are employed for patrolling the area. Sometimes adverse use of the water bodies can harm its residents.

This happens due to bathing and washing clothes using the water. It is difficult to take any strict action on this matter as it might aggravate the conflict. Hence abatement technologies are used to clean the water once it has been polluted.

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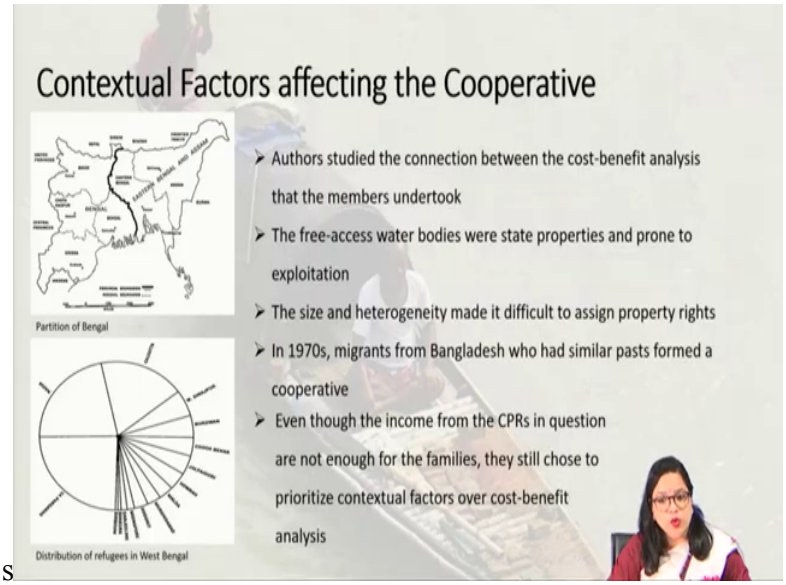

The third kind of external conflict happens due to release of effluents. A nearby battery factory releases its polluted discharge into the water bodies. This issue is resolved by redirecting the water to other places and purifying it using organic means. After closely examining the cooperative, it is now time to understand how it was a product of its contextual factors. In order to do so, the writers have studied the connection between the cost-benefit analysis that the members undertook within their socio-cultural context.

Initially, the water bodies in question were free access state-owned resources. Their use was dotted with rivalry. Since no one bothered to take care of the resource, it deteriorated in nature. Establishment of property rights was the way to go for managing this resource. However, the enormity of the resource and the mixed nature of the community meant it would be difficult to assign property rights as no particular group could be held responsible for taking care of the resource.

Moreover, there was no way for the resource owners to effectively communicate with each other. In the 1970s, resource users who had shared similar past experiences came together to form the cooperative with the idea that the benefits of doing so would eventually outweigh the cost.

This was the result of awareness of the potential benefits that accompanied collective action. However, even though all the fishermen in the area came to know about the advantages, only few of them took the initiative to form the cooperative. The authors have argued that these choices were dependent on "the history and culture of the members and the larger economic backdrop in which their choices were embedded".

These members were migrants who had escaped their country to protect themselves from political and communal clashes. This also meant that they were on the lookout for new employment opportunities. The shared lived experiences fostered a sense of we-feeling among them.

Research by Louderdale et al. has shown how "common threat may increase solidarity". The fear of losing the water bodies which had become more than just common-pool resources became the turning point for the fishermen community who decided to come together to manage these. Even though the income from the CPRs in question are not enough for the families, they still chose to prioritize contextual factors over cost-benefit analysis.

Moreover, the introduction of the boating facilities is an example of how technology can be used to gain benefits from the common pool resource in a sustainable way.

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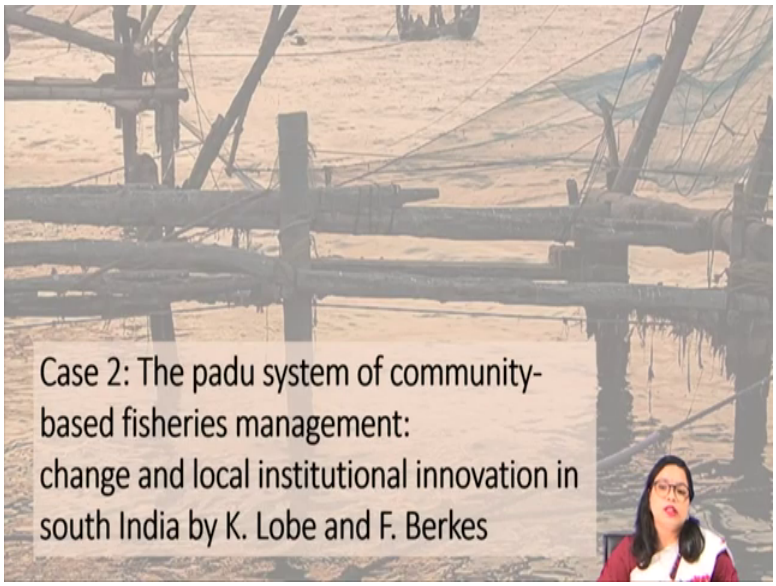

The second case is based on a study by Kenton Lobe and Fikret Berkes on small scale community-based fisheries management.

The arrangement here is known as the padu system. And it has been defined by Panini as the traditional system of granting entitlement to eligible members of a particular community to undertake specific fishing activities in certain designated fishing grounds of the lagoon during specified seasons.

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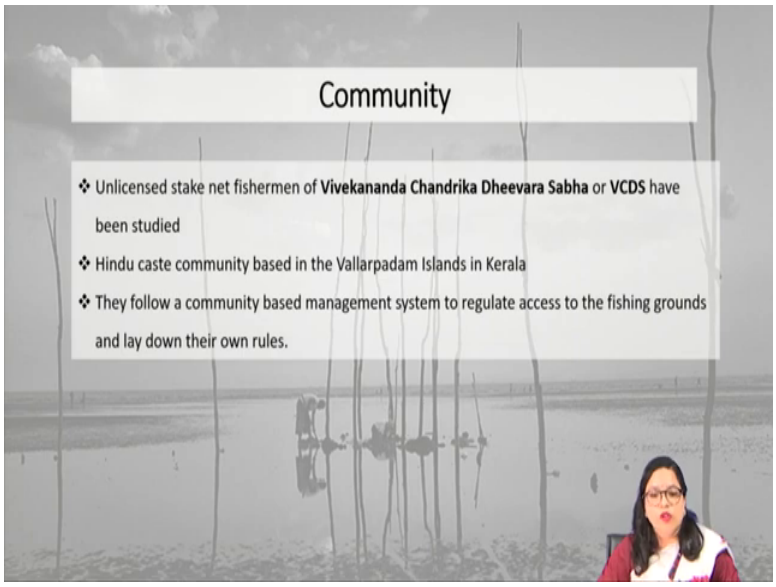

The community of Vivekananda Chandrika Dheevara Sabha or VCDS, particularly the unlicensed stake net fishers are subject of the study.

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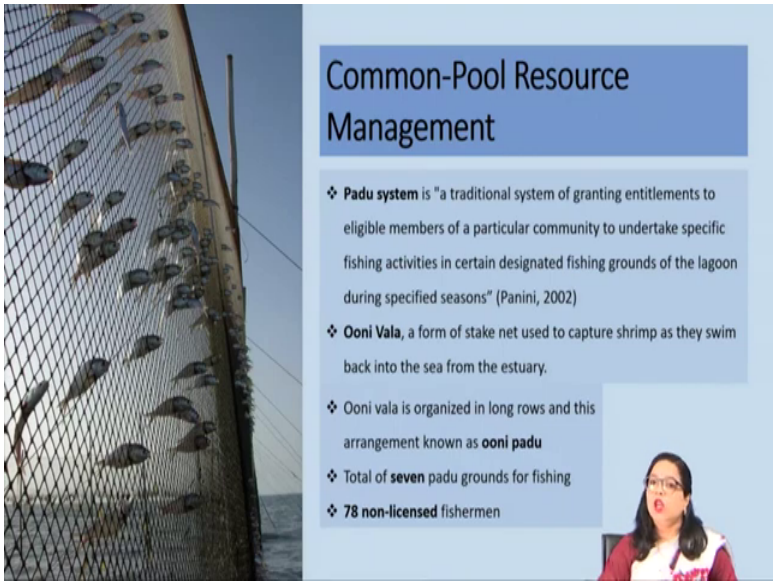

The community of Vivekananda Chandrika Dheevara Sabha or VCDS, particularly the unlicensed stake net fishers are subject of the study. They are a Hindu caste community based in the Vallarpadam Islands in Kerala. The reason why they have been chosen for this study is because they follow a community-based management system to regulate access to the fishing grounds and lay down their own rules. The equipment used for fishing is referred to as Ooni Vala in the local language. It is a form of stake net used to capture shrimp as they swim back into the sea from the estuary.

In areas where there are tidal currents, the ooni vala is organized in long rows and this arrangement known as ooni padu. There is a total of seven padu grounds for fishing in which 288 stake nets are operated by 126 fishermen. Among them, there are 48 licensed fishermen and 78 non-licensed ones.

The latter is divided into three groups and fish on a rotational basis on three padu grounds consisting of 144 fishing nets.

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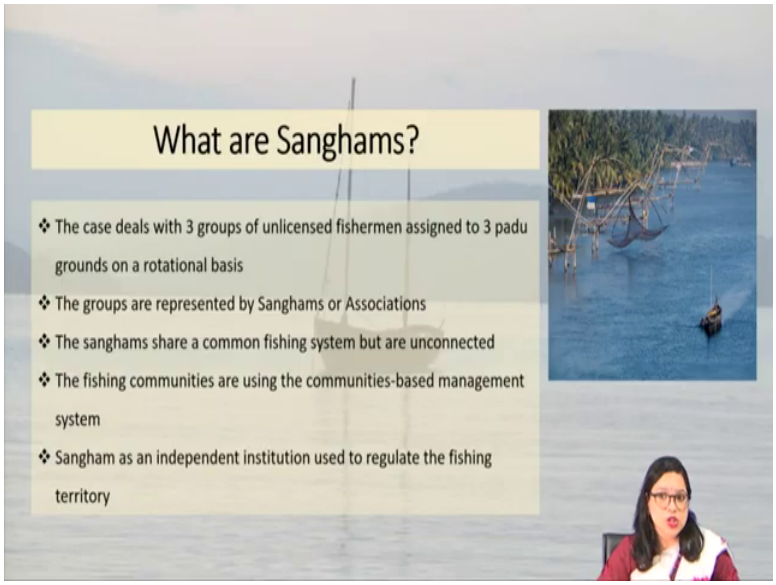

These groups are part of three different Sanghams, which means association. Although they are not linked to each other, they share the same techniques for management of fisheries and do their fishing in the same water body using the same equipment.

However, when it comes to the assignment of fishing rights, the sanghams operate separately from one another. Thus, the fishing communities are using the communities-based management system and the sangham as an institution to regulate the fishing territory.

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In the beginning of the 1980s, the first out of the three sanghams was created by 21 families of VCDS. They made a stake net row containing 43 unlicensed net. Their argued their right to caste based occupation when taken to court. The other two sanghams emerged later and created Ayapenpadu containing 31 families and Muruganpadu with 26 families respectively.

Even though sanghams are technically illegal as they have not been recognized by the law, they are registered with the office of the State Registrar at the High Court.

They are considerably well organized and each sangham contains a president, vice president, treasurer, and a secretary, elected yearly by the members. The members have to follow pre-determined set of rules in their daily operation. Meetings are held multiple times in a year to discuss matters pertinent to the sangham, assignment of fishing territories, and formulation of rules.

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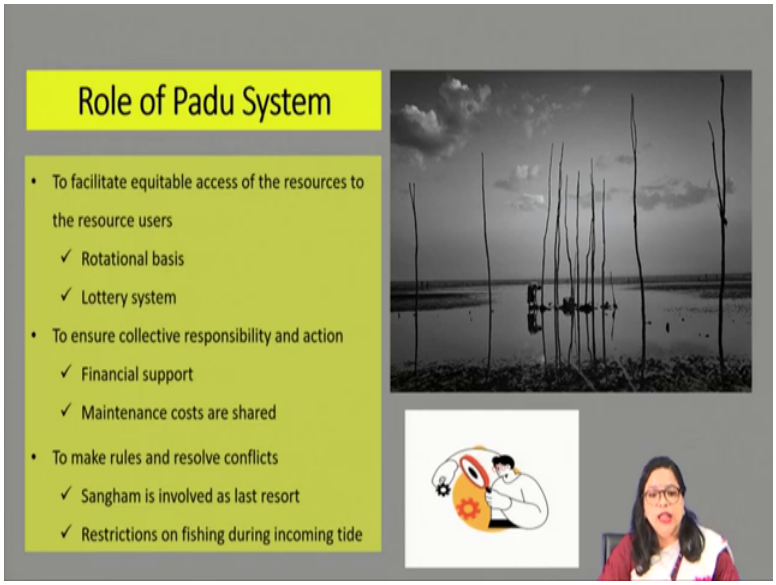

The padu systems that the sanghams govern have three roles. Firstly, to facilitate access according to the needs and requirements of the resource users. Secondly, to ensure collective responsibility and action. Finally, to make rules and resolve conflicts.

Let us look at each of these roles in further details. The equitable access to resources is ensured through rotational basis of fishing. The sanghams have instituted a lottery system using which the access is determined, enabling each group to have a chance at fishing from the prime grounds. The process of lottery happens on a yearly basis where the members gather to draw lots. The results determine the rest of the year for the fishermen.

Within each of the sangham are present several measures that ensure collective responsibility. Financial support is made available to members who have had a loss in the family or have to marry off a family member.

It also has provisions for donating to the temple during religious occasions. Moreover, the maintenance costs of the stake nets are shared by all the members of the sangham.

Finally, the sanghams are in charge of resolving conflicts as and when it arises. It also lays down the rules that guide the functioning of the institution. Usually conflicts arise from allocation of fishing territories or the matter of fishing from another fisherman's territory in the event of their absence.

Matters are taken to the sangham level only when it cannot be solved between the fishermen themselves. The sangham also prescribes some restrictions when it comes to fishing during incoming tide. This is when the shrimps enter the estuaries to breed, a process which if interfered with can affect sustainability. Such action is fined or reprimanded with a formal warning depending on the sangham.

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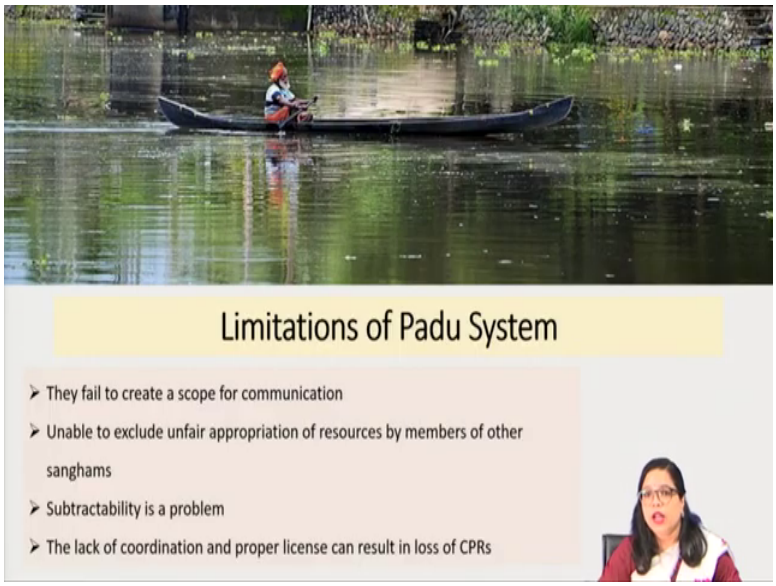

Even though sanghams have local rules and regulations, they fail to create a scope for communication within the three unlicensed stake fishermen groups.

Each sangham decides its own membership, however, it is unable to exclude unfair appropriation of resources by members of other sanghams. This has happened mainly due to lack of recognition in the eyes of the government and the absence of official license. They are not recognized by the licensed groups or any other fishing groups, for that matter.

Along with the problem of exclusion, subtractability is also a problem. In spite of having proper rules in place to prevent overexploitation, the lack of coordination and proper license can result in the long run, loss of CPRs in question.

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The third case that I will be discussing today shows how traditional communities have systematically managed and conserved natural resources since times immemorial.

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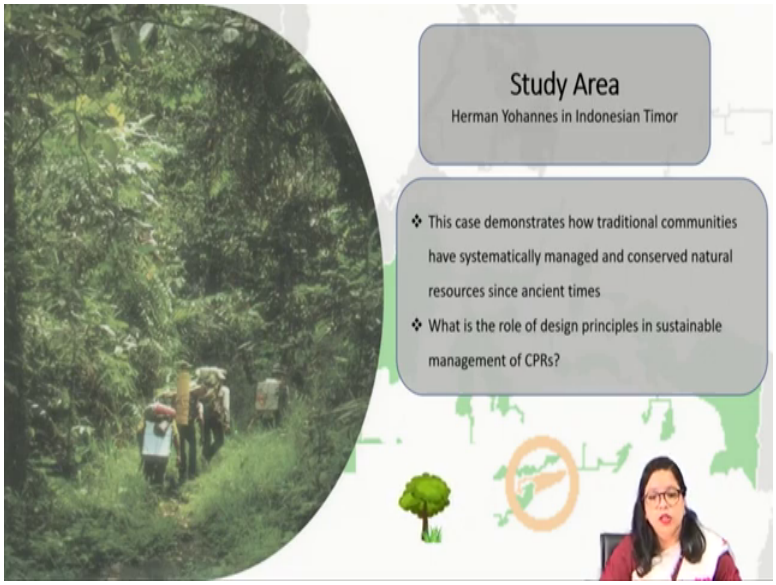

This case study by van Ast et al. on the Adat Institution and the management of Herman Yohannes in Indonesian Timor illustrates the role of design principles in the sustainable management of CPRs.

The forest management system in the western side of Timor has existed since a long time. However, the rights to regulate and enforce rules have passed on from the hands of the traditional community to the state and back to the traditional community again.

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The traditional institution of Adat provides rules and regulations for how the Indonesian community members can lead their life.

Not only it prescribes the social rules but also rules related to the physical surroundings. According to the regulation No. 39/2007 passed by Ministry of Foreign Affairs, "the Adat institution refers to a social organization which has the objective to conserve and develop the Adat culture based on traditional customs". Although the state has a strong role in the management of forests, the communities follow the prescriptions of the Adat system.

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The community that this particular case study focuses on is based in the sub-district of Amarasi on the Timor Island, located around 40 kilometers away from the Province of Kupang. This area has a tropical forest cover which has a rich bio-diversity along with the presence of several local species.

The community is marked by the following characteristics. Firstly, they rely on the forest for their livelihood. Secondly, there is hardly any engagement in the market economy. Thirdly, ties with family and community members are considered important. Finally, they believe in the Adat institution and the Fetor who is the leader of the area. The fetor's advice is taken in case of conflict.

Now that I have given you a brief idea of the community, I will discuss how the design principles given by Ostrom in 1990 can be used to analyse the forest management system under the adat institution in Indonesia.

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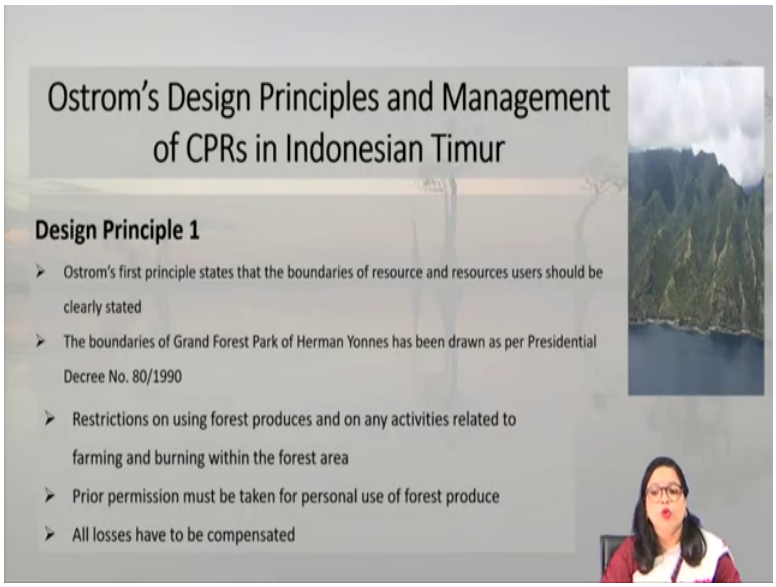

Ostrom's first principle states that the boundaries of both the resource and the resources users should be stated in clear terms.

In this case, the Grand Forest Park of Herman Yonnes is the resource and the community of people that stay in its vicinity and manage it are the resource users. The boundaries have been drawn according to the Presidential Decree No. 80/1990. however, it covers the traditional domestic quarters of the Amarasi tribe. Since the Adat rules do not provide any idea of the boundaries, the decree is adhered to as it gives collective ownership to the entire community.

Forest produces are off limits and there are restrictions on any activities related to farming and burning within the forest area. The members can utilize their own yards for this purpose. The members can also use timber and other forest produce for their personal use such as in the form of building materials for construction purposes. However, prior permission must be obtained from the leader of the area and to compensate the loss of trees, similar number of trees must be planted.

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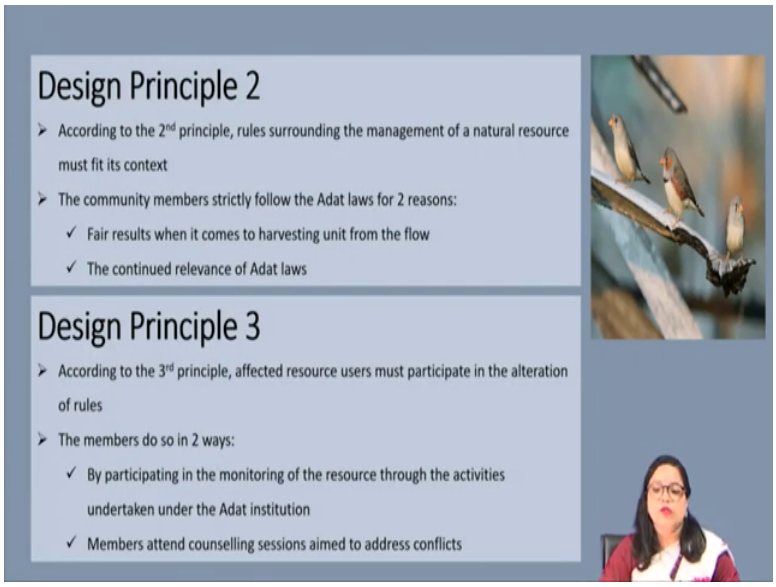

Let us move on to the second design principle which states that the rules surrounding the management of a natural resource must fit the local environment of the resource. As mentioned earlier, the community members strictly follow the Adat laws.

The two justifications given by them in this regard are: Firstly, following the same rules lead to fair results when it comes to harvesting unit from the flow. Secondly, the adat rules have existed since the times of the ancestral members of the community. The local legend is that there will be spiritual punishments for exploiting forest resources. The third design principle states that the resource users who are affected by the rules regarding the governance of resources must be allowed participate in the alteration of those rules. The ways in which the Amarasi tribe engages in the management of the forest indicates that the third principle is at work.

The members do so in the following two ways. Firstly, by participating in the monitoring of the resource through the activities undertaken under the Adat institution. Secondly, the

government organizes counselling programs through which it aims to address conflict resolution mechanisms. All members are invited to these sessions and it gives them a chance to modify the rules.

There is, however, very little chance of the members actively seeking the change of rules since they have been passed over multiple generations. Moreover, the willingness to change the prevalent rules may be perceived as a challenge to the leaders.

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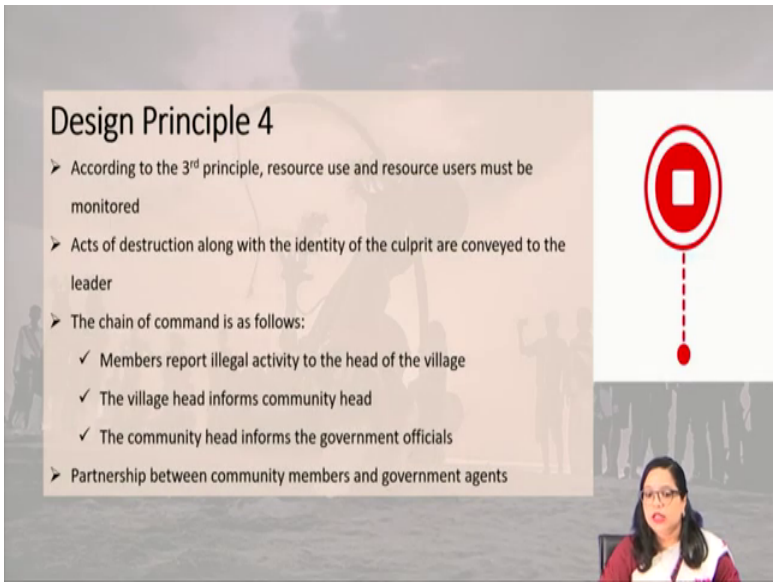

The fourth principle is related to monitoring of the resource as well as the users. Under this, there is the act of monitoring itself as well as the accountability of the community members for their actions. The members take their monitoring responsibilities very seriously. Acts of destruction along with the identity of the culprit are conveyed to the leader.

Local government officials and forest officials also stay alert regarding illegal activities. A chain of command is followed in this matter. Initially, after a member witnesses an illegal activity, they report it to the head of the village who in turn informs the community leader. The latter the passes on information to the government officials, and together they try to pinpoint the offender.

This shows that there is a partnership involved between the community members and the agents of the government.

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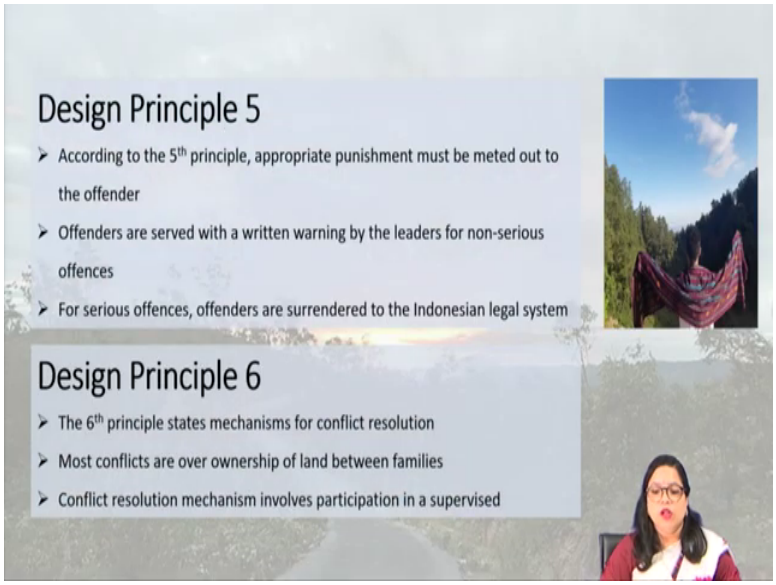

We have reached the fifth principle which deals with meting out appropriate punishment for the offence. The rules stipulated by the Adat institution are based on the monarchy system of Amarasi. In non-serious cases, offenders are usually served with a written warning by the leaders and allowed to go on the condition that they will not repeat the offence.

When matters are serious, such as large-scale felling of trees, the offenders are are surrendered to the legal system of Indonesian Government. The sixth principle or the mechanisms for conflict resolution come in handy during day to day activities as well as to resolve conflicts. Mostly, the conflicts are over ownership of land between families. Sometimes, there are instances of illegal felling.

The mechanism to resolve conflicts involves participation in a meeting that is supervised by the leaders. This system has been established as fail-proof over time.

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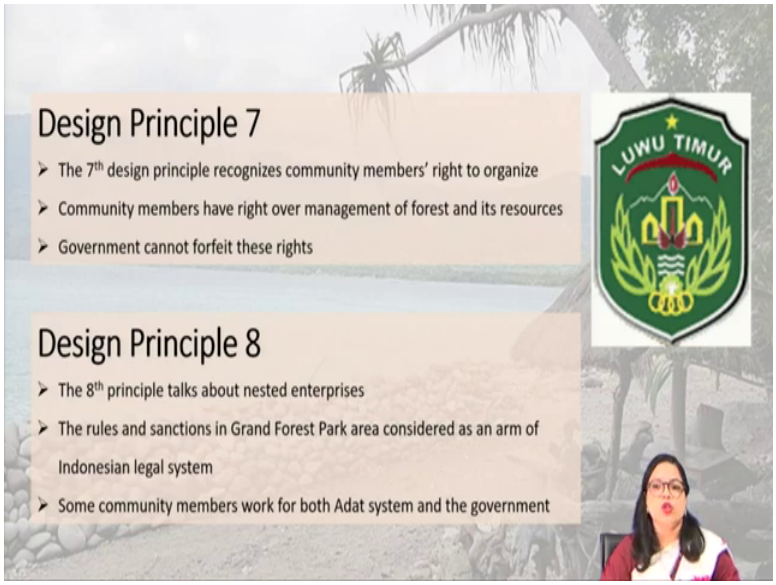

Under the seventh principle, which is the recognition of the community members' right to organize has been officially sanctioned by the Government of Indonesia as per the United Nation's 1992 resolution of recognizing indigenous cultures and traditions.

Hence, the community members have the right over management of forest and use of resources obtained from it. This gives them a certain level of assurance that they have rights which cannot be easily overturned, even by the government. Finally, the eighth design principle talks about nested enterprises which implies the governance of resources from bottoms up in an interconnected way.

In the Grand Forest Park area, the rules and sanctions have been institutionalized in such a way that they are considered as an arm of the legal system in Indonesia. Even the adat institution can be seen as a subset of the government since many members work for both the the institution and the government. According to them, the Adat laws take precedence when it comes to issues related to the forest.

In conclusion this case is very good example of how traditional management systems has characteristics which have only been studied relatively recently in theories related to sustainable management of natural resources. The age-old institution has survived

because of the history ties or historical ties, the social obligations and the authority obtained from its place within the Indonesian government governance structure.

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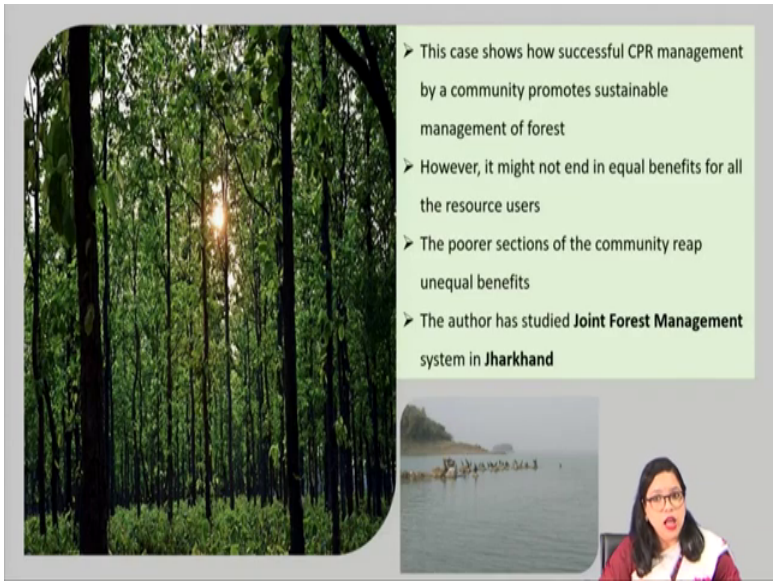

The fourth and final case that I will be discussing in today's class shows how successful CPR management by a community might not end in equal benefits for all the resource users. The case at hand is that of the study done on the system of Joint Forest Management or JFM by Sanjay Kumar in the Jharkhand area. The author points out through this case how JFM has been successful in promoting sustainable management of

forest. However, the achievement comes at a cost. It is the poorer sections of the community who pay the price.

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JFM was constituted to put an end to the rapid deforestation of forests that were state-managed before and after India's independence. It was found that the local community members were not proactive about preserving the forest as a result of which they had turned into de-facto open access regimes, resulting in uninhibited exploitation by insiders and outsiders.

The Indian National Forest Policy of 1988 stated that the management of forests could be successfully only if the local communities were involved. As a part of this policy, joint forest management was implemented by all the states to conserve forests as well as to alleviate poverty.

Under JFM, there was devolution of rights to manage, protect, and develop forest and forest resources from the state to the local communities who would organize in the form of co-operatives or committee at the Panchayat level. JFM also mentioned how benefits derived from the forests once they had been regenerated would be shared among the resource users.

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The case study is based on five villages located in the Ranchi district of Jharkhand. The forest in this area are managed by the Forest Department along with the participation of the local community members. In Ranchi, JFM was a part of the resolution taken by the Bihar government. According to it, there should be a village forest protection and management committee or VFC which will contain an adult member from each of the household having rights over the forest.

There can be a maximum of 18 members and the secretary is usually a local forest official. The chairmen and other members are all local villagers. Together, they are in charge of looking after Protected Forests or PFs.

Villagers in the study are of Ranchi have traditionally looked after the forests and derived forest resources based on the local rules. This service has been rendered by them voluntarily even before the implementation of VFCs. Hence, the Joint forest management arrangement in Ranchi is akin to that of the system of community forest management or CFM.

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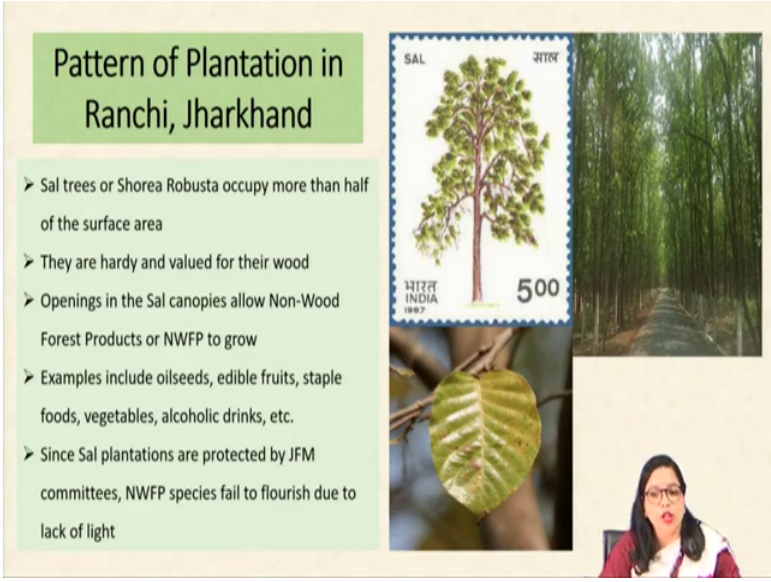

In these forests, Sal trees or Shorea Robusta occupy more than half of the surface area and are priced for their wood. The tree is hardy and can bounce back once all interferences have been removed.

Moreover, openings in the canopy of the sal trees makes it possible for various species to grow on the ground. They are known as Non-Wood Forest Products or NWFP and are valuable to many people, especially the poorer sections. Examples of such resources include oilseeds, edible fruits, staple foods, vegetables, alcoholic drinks and so on. In dry areas, where sal trees have been vigorously exploited, the ground cover is dominated by thorny shrubs which provide fruits and even low-quality fuelwood.

However, in areas where Sal plantations are protected by the JFM committees, the species valuable for NWFP fail to flourish as light fails to enter through the thick Sal canopies. Since the first half of the 20th century, biotic degradation has led to loss of viable germination options for non-sal species, which has led to the dominance of sal trees valued for its timber.

Secondly, the local villagers denote the wood derived from sal as good timber and that derived from non-sal species as bad timber. As a result, there is willingness to protect the good timber and use the so-called bad timber for daily usage. This, however, reflects the mentality of elite farmers.

The VFCs mostly comprise of elite members who further restrict the growth of NWFPs by putting high premium on cutting of sal trees. As the sal trees proliferate, the non-sal species do not receive adequate sunlight required for their survival. Moreover, the VFCs allow forests to be open for access only for particular days in a year. This further hurts the chances of the poor at accessing the NWFPs.

The author concludes that it cannot be assumed that all participating resource users will benefit equally in this case.

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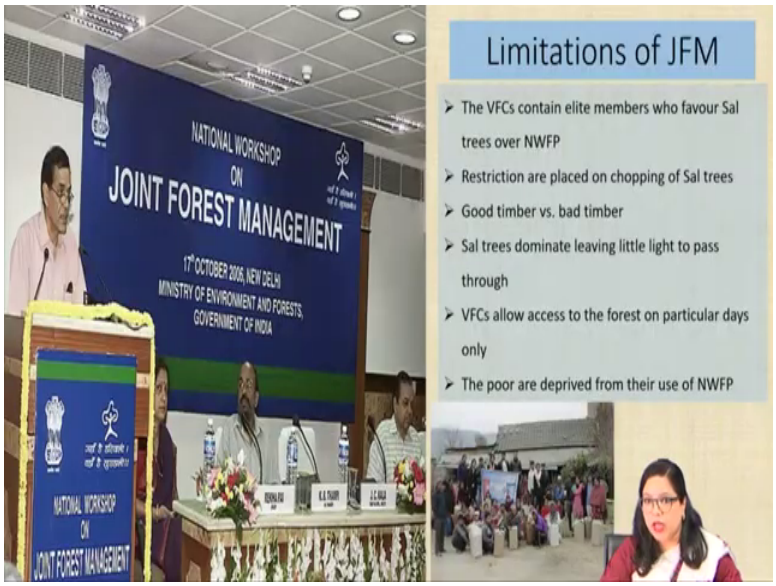

The current JFM arrangements favour the rich at the expense of the poor and might not be a good idea for sal dominated areas where there are chances that the needs of rural elite will be met through long-term stocking of timber.

Through these cases I have presented the different scenarios in which natural common pool resources are governed in the field by the resource community.

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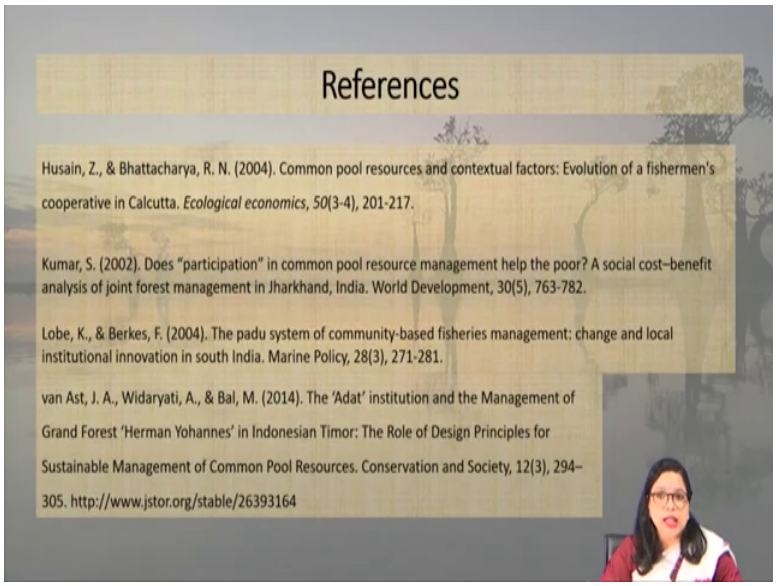

In the next lecture, we will look at how man-made resources are governed and if and how arrangements differ from that of the natural resource management.

Thank you for listening and have a great day ahead.