


**Sociology and Resource Management**  
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**Module - 01**  
**Natural Resource Management and Different Theoretical Approaches**  
**Lecture - 04**  
**Institutional Analysis and Development (IAD) Framework**

Hello everyone. So far, we have discussed common pool resources and the tragedy of the commons. And now we will be discussing Hardin's proposition of the Institutional Analysis and Development Framework.

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### Introduction

- Ostrom-Through communal governance and systems of monitoring, management, and enforcement, the 'tragedy' of the commons could be avoided.
  
- Commons as social systems.
- Rules that prevent the tragedy of commons.
- Institutional Analysis and development framework.

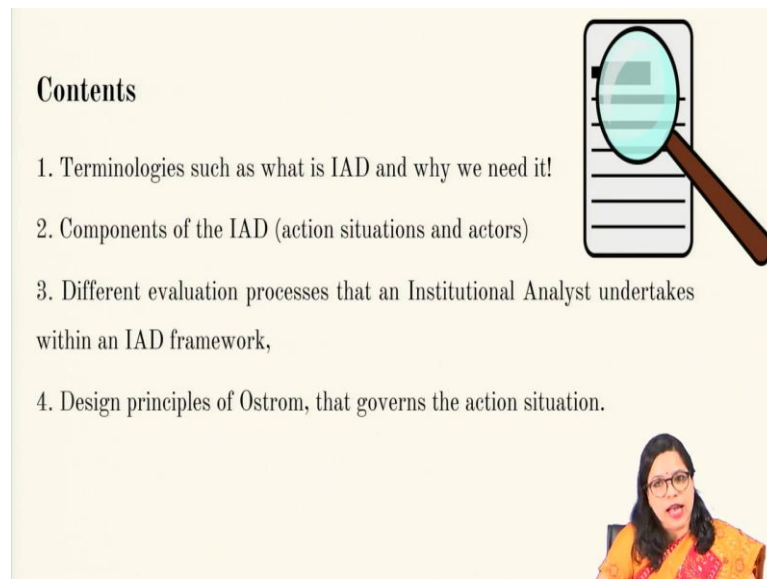


Her argument for the successful management of common pool resources turned out to be a refutation of what Hardin was proposing that if people come together and manage a common resource then it is susceptible to the tragedy of the commons. Ostrom; however, did not agree with the idea that Hardin was proposing.

Rather according to her a shared resource if it comes together and if people come together and manage a shared resource then people being rational will find out ways to manage and govern them coming up with different kinds of rules and management mechanisms.


Ostrom, therefore, approaches the path of conceptualizing commons as a social system. She explained that by coming up with certain rules would prevent the occurrence of the tragedy of the commons which was considered inhabitable by Hardin's proposition. These rules have been formulated within a framework which is termed the institutional analysis and development framework given by Ostrom which we will be discussing in detail in this module.

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**Contents**

1. Terminologies such as what is IAD and why we need it!
2. Components of the IAD (action situations and actors)
3. Different evaluation processes that an Institutional Analyst undertakes within an IAD framework,
4. Design principles of Ostrom, that governs the action situation.



Contents that will be discussed; we will first try to understand the terminology such as what is IAD and why we need it then we will discuss the components of IAD such as the action situations and the actors. Then we will cover the different evaluation processes that an analysis Institutional Analysis undertakes within the IAD framework we will also discuss the design principle of Ostrom that governs the action situation.

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Introduction to the IAD: why do we need it?

Until the 1980s - self-organization of management of commons resources was not possible

Management of self-organized resources- Institutions within systems and arrangements for the process of management.

Frameworks provide variables to analyze institutional arrangements

*The Institutional Analysis and Development (IAD) framework is considered to be a “multi-tiered conceptual map”, that is created to identify the major structural variables comprising institutional arrangements, but whose values differ from other institutional arrangements (Ostrom, 2011).*

Until the 1980s scholars believed that people cannot organize themselves on their own and come up with certain kinds of management regimes or rules that could regulate and manage the common resources. But what if people organize themselves and organization is achieved then the aspect of management will come into play then institutions will be needed in the process of management of the resources.


In this context developing a framework is most useful as the framework provides the necessary variable to analyze institutional arrangements in the process of analysis and conducting temporal theoretical comparisons of the real-world institutional arrangements.

Similar is the usefulness of the IAD framework. As explained by Ostrom the institutional analysis and development framework is considered to be a multi-tiered conceptual map that is created to identify the major structural variables, comprising institutional arrangements, but whose value differs from other institutional arrangements.

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### Introduction to the IAD: why do we need it?

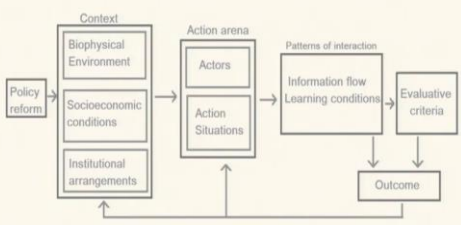
- Helps in gathering empirical knowledge of real-world scenarios, so that the Institutional assessments aid policy reforms for sustainable management and governance of resources.
- Policymakers and scholars focus on the IAD framework for its organizational, analytical, and diagnostic attributes.



Such assessment of institutional arrangements through the IAD framework helps in gathering empirical knowledge of the real-world scenario. Further, policymakers and scholars can use the IAD framework to develop resource management mechanisms that can democratically resolve management problems.

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### The IAD framework and its variables




1. Actor and the situation
2. Action situations and
3. The action arena

The likely behaviour of individuals is assessed within such multidimensional structures.

The most important component –the action arena

According to Ostrom (2011), the action arena comprises the action situation as well as the actors and in this process, the actor and the action situation remain separated to accommodate different behavioural theories.

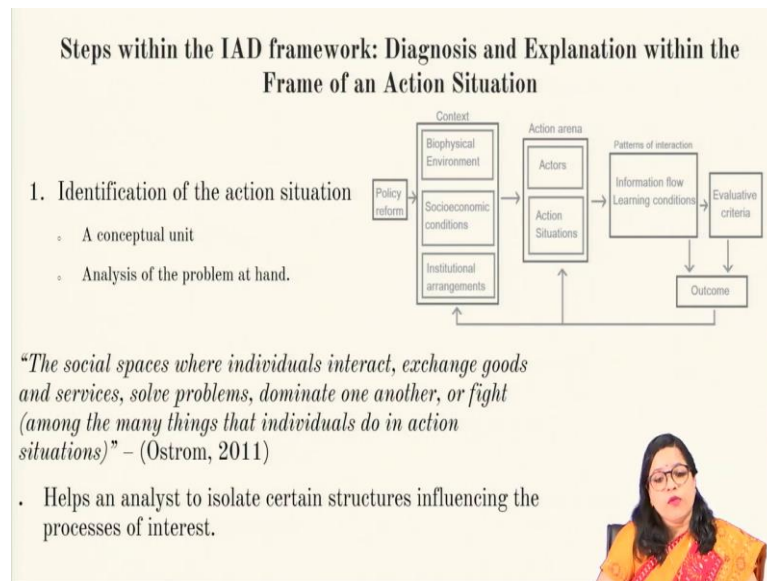


The framework comprises the following variables that we will access one by one. It includes the variable of actor and the situation in the first case; the action situations and the action arena. The likely behaviour of individuals are assessed within such multi-

dimensional structures that you can see in the diagram. The most important component in the action arena comprises the action situation and the actors.

According to Ostrom, the action arena comprises the action situation as well as the actors, and, in this process, the actor and the action situation remain separated to accommodate different behavioral theories. How do we then undertake the institutional analysis?

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For that a few steps need to be followed. 1st, we need to identify the conceptual unit which is also called the action situation. This identification is necessary to analyze the nature of the problem at hand. The action situation as explained by Ostrom is the social space where individuals interact, exchange goods and services, solve problems, dominate one another or fight among many things that individuals do in an action situation.





If you look at this definition or the way Ostrom was defining the action situation then you would find that this is the place where actors engage with each other through dialogue discourses and this is the place also where conflict and contestations may arise. Such action situation is helpful in the processes of predicting, describing, and explaining behaviour of individuals within the institutional arrangements.

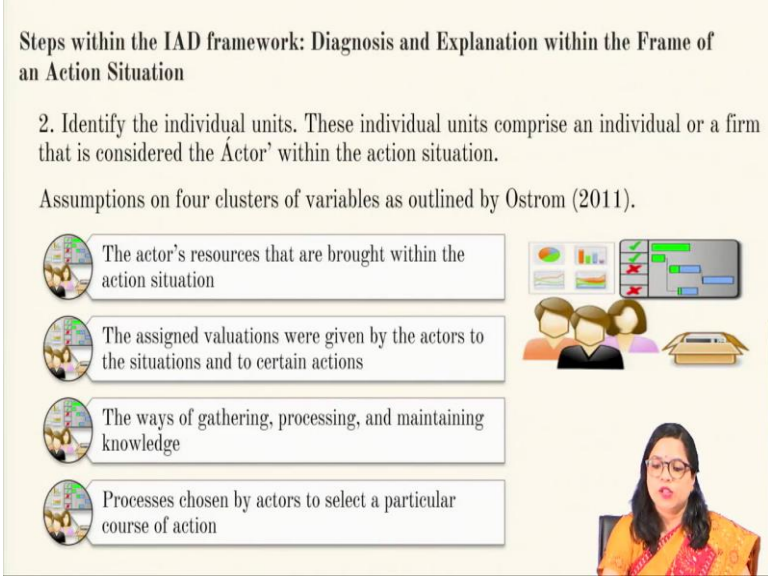
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**Steps within the IAD framework: Diagnosis and Explanation within the Frame of an Action Situation**

2. Identify the individual units. These individual units comprise an individual or a firm that is considered the 'Actor' within the action situation.

Assumptions on four clusters of variables as outlined by Ostrom (2011).

-  The actor's resources that are brought within the action situation
-  The assigned valuations were given by the actors to the situations and to certain actions
-  The ways of gathering, processing, and maintaining knowledge
-  Processes chosen by actors to select a particular course of action



After the action situation is identified we have to identify the individual units. These individual units comprise the individual or a firm and are considered the actor within the action situation. Among these, there are assumptions of four clusters of variables as outlined by Ostrom.

These include the actor's resources that are brought within the action situation. The second is the assigned valuation were given by the actors to the situation and certain actions. The third is the way of gathering, processing, and maintaining knowledge. The fourth is the process chosen by actors to select a particular course of action.

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## Example

1. Decentralized Forestry Governance
  - action arena - forestry sector,
  - Actors - private landholders, rural community groups, forest-user groups, NGOs, externally funded project representatives, municipal governments, central-government agents, private forestry firms, and others
2. Possible conflicts between different forest-user groups with unclear boundaries, or forest property rights.  
Three main categories:
  - 1) physical conditions,
  - 2) community attributes, and
  - 3) local institutional arrangements.



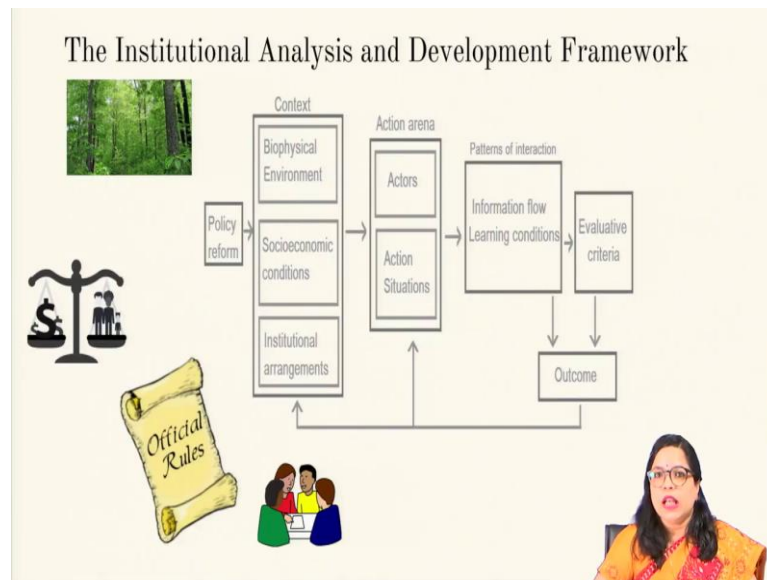
For example, if we want to conduct an institutional analysis of decentralized Forest Governance, then the action arena, in this case, will be the forest sector or even the forestry sector in a particular part of the country or a region can be taken in this case or the level of governance depending on what you are interested in researching.

The actors may include any combination of private landholders, rural communities, forest user groups, NGOs, externally funded project representatives, municipal governments, central-government agents, private forestry firms, and others. Another example of an action situation is the possible conflict that may arise between different forest user groups with unclear boundaries or forest property rights.

The behavior of each of the actors in these situations can be explained by the IAD framework through three main categories. They are the physical condition, the community attributes, and the local institutional arrangements.



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The diagram shows a typical IAD framework where the policy reform necessitates an assessment of the context. Like the biophysical environment, the socio-economic condition, and the institutional arrangements. Following this, the action arena is evaluated which comprises actors and the action situations. The pattern of interactions is assessed in the form of information flow and learning conditions.

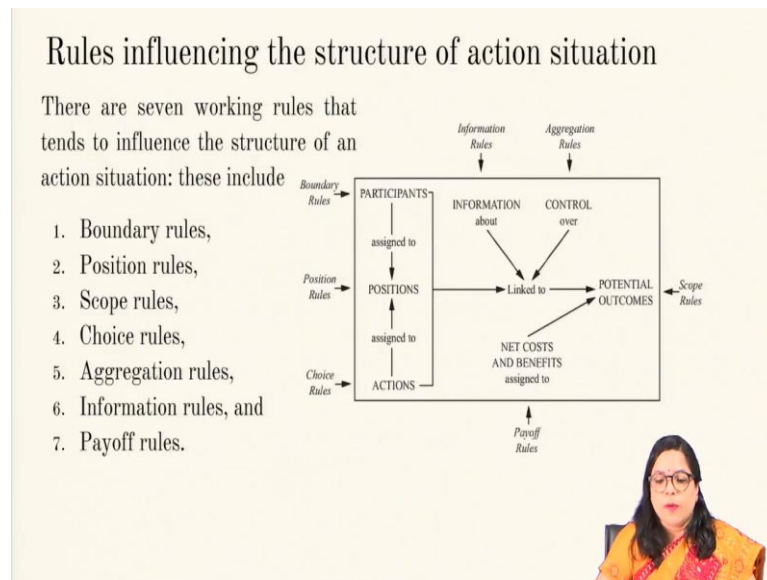
The evaluation criteria and the pattern of interaction give the final outcome, the further functions to influence the action arena and the context as well. The biophysical environment as you can see in the diagram then it refers to the general characteristics or the physical conditions of the action arena and the nature of the goods.

Socio-economic conditions in the context box if you see then they refer to the historical background, culture, religion, values, beliefs, knowledge, poverty level, and other socio-economic characteristics of the group who are defined as the main actors in the action arena.

The institutional arrangements or the rules in use refer to the norms that are respected by the community or the actors participating in the action situation in keeping a check on the short-term and long-term exploitation of the common resources. Patterns of interaction are created in different action situations where different actors interact over time.



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Seven working rules tend to influence the structure of an action situation and these include the boundary rules, the position rules, the scope rules, the choice rules, aggregation rules, information rules, and the payoff rules. The cumulative effect of these seven types of rules affects the seven elements of an action arena.

Let us take an example to understand the different parts of the action situation in the light of rules influencing the action situation. In the boundary rules, we analyze who are the appropriators have they locally bound resource users, or can other members enter the domain?

Similarly, in the position rule, we check how the position of the individual change from being simply members to holding specialized positions like the committee chairman. In the scope rule, we describe how much knowledge the appropriators have regarding the restrictions in geographical or functional domains. In the choice rule, we see what the level of understanding of the appropriators regarding the allowed techniques of resource appropriation is.

In the aggregation rule, we described the understanding that exists considering or concerning the rules affecting the choice of harvesting activities. Like, do certain actors or actions require prior permission or agreement of or from others? In the information rule, we find out what information must be held secret and what information must be made public.


In the payoff rules, we describe what is the nature of the sanctions that are imposed for breaking rules who are the ones who sanction the rule breakers, and what is the degree of reliability of the imposed sanctions.

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**Rules influencing the structure of action situation (example case)**  
Let's consider the appropriating problems within harvesting activities related to natural resources as exemplified by (see E. Ostrom, Gardner, & Walker, 1994; E. Ostrom, Schroeder, & Wynne, 1993).

Certain questions need to be answered before one can proceed with the analysis.

1. the set of actors- who and how many people are withdrawing the resource (like fish or fodder)?
2. What are the existing positions (such as associations, irrigation associations, and distribution guards)?
3. What are the allowable actions: (are chainsaws used for sawing timber? are the fisheries depleting the natural stock etc)
4. What are the potential outcomes? Such as what damage to the natural environment is being faced?
5. Degree of control over choice? Do the appropriators decide to cut trees on their own or gather a permit?
6. How much information is available to the appropriators? (information on the resource, the costs and benefits and the results of their usage.
7. What is the costs and benefits of the actions?



According to scholars certain questions need to be answered before one can proceed with the analysis. These include the questions discussing the set of actors like who and how many people are withdrawing the resource like the fish or the fodder. The second is what are the existing positions like the irrigation association and the distribution guards. What are the allowable actions like chainsaws used for sawing timber are the fisheries depleting the natural stocks?

What are the potential outcomes such as what damage to the natural environment is being faced? The degree of control over choice like do appropriators decide to cut the trees on their own or gather a permit and how much information is available to the appropriators, information on the resource the cost and the benefit, and the result of their usage for example. And what are the cost and the benefit of the actions?

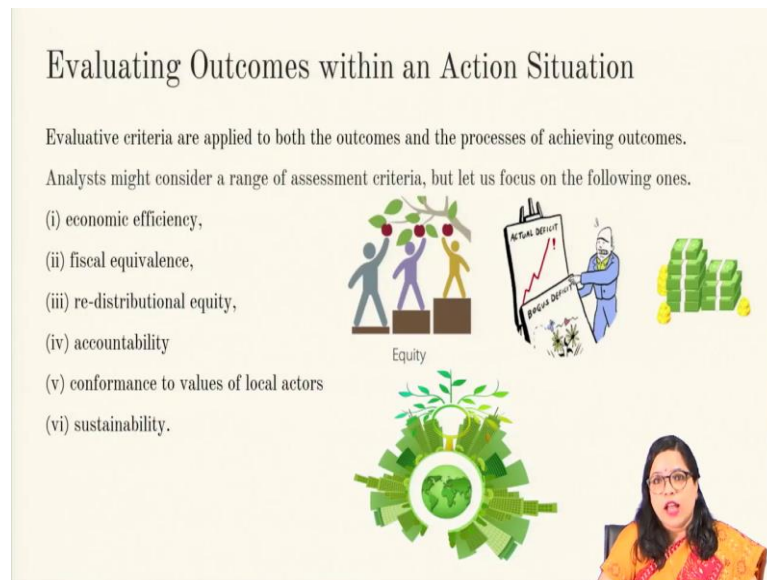
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## Evaluating Outcomes within an Action Situation

Evaluative criteria are applied to both the outcomes and the processes of achieving outcomes.

Analysts might consider a range of assessment criteria, but let us focus on the following ones.

- (i) economic efficiency,
- (ii) fiscal equivalence,
- (iii) re-distributional equity,
- (iv) accountability
- (v) conformance to values of local actors
- (vi) sustainability.



In addition to predicting outcomes, the institutional analyst may evaluate the outcome that is being achieved as well as the likely set of outcomes that could be achieved under alternative institutional arrangements. Evaluative criteria are applied to both outcomes and the processes of achieving outcomes.

An analyst may consider a range of assessment criteria but let us focus on the following ones. Economic efficiency deals with the cost and the benefit of the resource allocation and hence is essential as policy revision would alter individual behaviour and simultaneously the resource allocation.

The second is fiscal equivalence. The fiscal equivalence will deal with the individuals bearing the burden of the service the benefit from is also an essential element. The third is redistribution equity which focuses on the benefit provided for the needy that might interfere with achieving fiscal equivalence.

Accountability of those in authority towards the rest of society also plays an important role. Conformance to the values of local actors and evaluation of how these outcomes fit the values of the locals or those involved also plays an important role. The last or finally, sustainability matters a lot. For example, unless institutional arrangements can respond to the ever-changing environment the sustainability of the situation is likely to suffer.

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### Ostrom's Design Principles (rules influencing the structure of action situation)

According to Ostrom, design principles refer to the "element or condition that helps to account for the success of these institutions in sustaining the [common-pool resource] and gaining the compliance of generation after generation of appropriators to the rules in use"



(OSTROM, 1990: 90). (Reformulating the Commons, Ostrom, 2000)



So, according to Ostrom, the design principle refers to the element or condition that helps to account for the success of this institution in sustaining the common pool resources and gaining the compliance of generation after generation of appropriators to the rules in use. Analyzing several empirical instances and studies Ostrom propounded eight design principles to create a sustainable commons.

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### Ostrom's Design principles influencing the action situations



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1. Creation of user boundaries and resource boundaries, where Clearly defined boundaries where households and Individuals have rights to withdraw resource units from the common-pool resource (CPR), and these boundaries are clearly defined
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2. Congruence of commons-governing rules with the local social and environmental conditions. This deals with the appropriation rules that restricts time, technology place and resource quantities
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3. Collective-choice arrangements, where stakeholders of the resource regime could participate as well as modify rules of management
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4. Monitoring of users and monitoring of the resource done by particular individuals and entities who are also accountable for and to the appropriators.



As we have been discussing in the earlier modules by now it must be clear to all of you that when we manage a resource in commons it is very difficult to avoid over-

exploitation of the resources. And things that we are discussing in the present module were proposed by Ostrom to bring in a sustainable resource governance mechanism.

As per the review undertaken by Cox, Arnold, and Thomas, the following are the detailed design principles that were given by Elinor Ostrom. These are the creation of user boundaries and resource boundaries, which were clearly defined boundaries, where households and individuals have the right to withdraw resource units from the common pool resources or the CPR, and these boundaries, are clearly defined.

So, 1st what Ostrom was proposing is to have a clear-cut boundary. I imagine and I suppose that when we were discussing about in the initial classes that when you have a resource like a river for example, or if you have a forest that spreads across two villages then you would find that defining the boundary would be very difficult. And in this case, it is also difficult to find who is overusing the resources and who is not.

And in this case, if we consider Ostrom's design principle then the first case is that if you have a clear-cut boundary then it becomes easy to govern and manage the resource. Similarly, if we come to the 2nd criterion or the design principle that Ostrom was giving is that congruence of commons like governing rules with the local, social and environmental conditions. These deal with the appropriation rules that restrict time, technology, place, and resource quantities.

So, these are the rules that the communities come across and create. So, that they manage and govern the commons. The 3rd is the collective choice arrangement where stakeholders of the resource regime could participate as well as modify rules of management. And here again, Ostrom is giving some credit to the resource users where they come together, and the stakeholders come together and create regimes where they can manage and participate in creating rules.

The 4th is the monitoring of users and monitoring of the resource done by particular individuals and entities who are also accountable for and to the appropriators. So, here she also comes up with an idea that there should be members who should also look into the governance and the management of the commons among the appropriators, and they should be also accountable to others as well.

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The 5th principle that Ostrom proposed is the graduated sanctions for violations of rules and depending on the seriousness of their offense they will be given sanctions. Because according to Ostrom if we do not have a clear-cut idea of what penalty we have to give if we overuse the resources or if we are crossing the boundaries and not abiding by the rules that are set by the community then what are the problems that we are going to face?

If the individual does not have a fear of these kinds of graduated sanctions, then there is a high or high there is high chance that the individual might go and overexploit the resources. So, graduated sanction according to Ostrom keeps a check on the individual desires. The 6th is the conflict resolution mechanism which should be low cost between the appropriators or the officials and vice versa.

According to Ostrom, apart from having graduated sanctions there is also there should also be a mechanism of conflict resolution and this conflict resolution should not cost the individuals or the appropriators a lot. Like they should not have to go to court and fight cases, but there should be a mechanism through which a decision regarding the conflict could be resolved within the stakeholders be it the appropriators or the officials and the appropriators, and vice versa.

The 7-design principle that Ostrom was proposing is the minimal recognition of the rights of local users to organize and the rights of the appropriator to devise their institutions are not challenged by the government. Because here Ostrom was trying to

come up with the idea that local people can manage their resources in a better way than the government can imagine.

So, here should the local people should be given the right more on deciding how they want to manage and govern the resources. The last design principle that Ostrom was proposing was a nested enterprise with multiple layers of governance where monitoring, appropriation, enforcement, conflict resolution, and other governance activities are organized.

However, as per Kharkonger and Kanwar, instances of ignorance of Ostrom rules have led to the resource over-exploitation and degradation of the commons because as we had discussed earlier in various classes you would know that if individuals come together and they start looking at the individual desires then it becomes difficult to manage and sustain a resource.

And Ostrom was giving certain examples or design principles where she was also trying to come up with the idea of how we can check these kinds of desires. So, if we ignore Ostrom's rules then there would be over-exploitation and degradation of the commons as Hardin was proposing.

So, given this idea, I would stop here in this lecture, and we will keep on discussing how ignorance of Ostrom's design principle led to the tragedy of the commons in the next class.

Thank you for listening and have a great day ahead.