Sustainable River Basin Management

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Module – 02

Lecture - 10

Part - 05

Welcome everybody to Sustainable River Basin Management, module two, part five. In our last part we are going to speak about river basin management.

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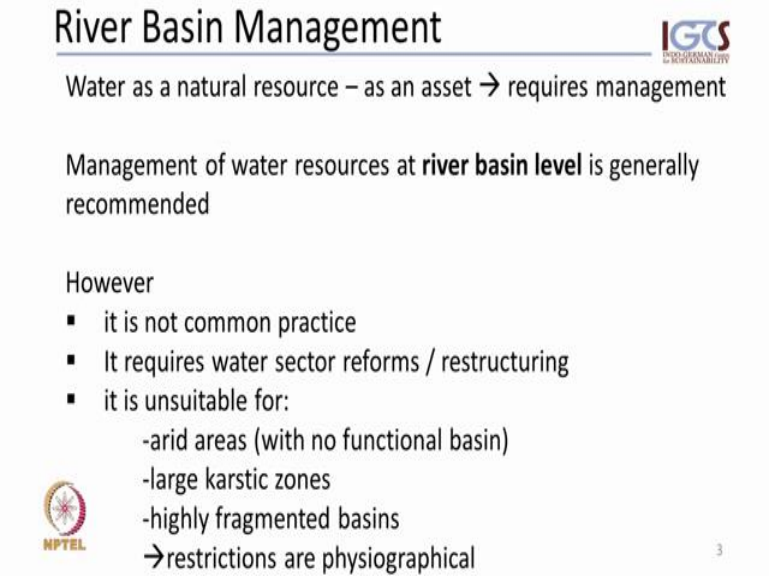

Because water is a natural resource and also an economic asset, it requires management. And generally, the management of water resources is recommended to take place at river basin level. However, it is not a common practice and it requires, in many cases, severe water sector reforms or restructuring of how water is managed to this point. And it is simply unsuitable for certain conditions such as in arid areas where there is no functional river basin, in large karstic zones and then, highly fragmented basins. But what you can see is, that those restrictions are all linked to physiographical conditions and not primarily to human systems or societies.

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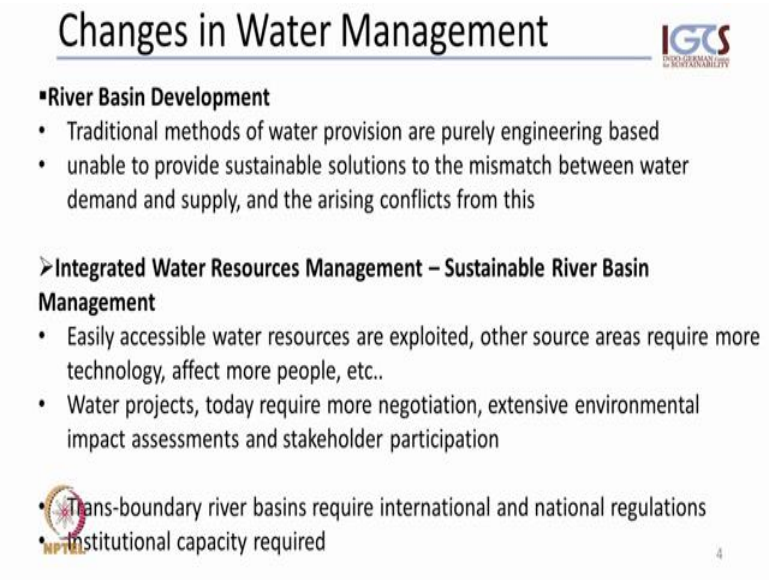

Now, let us look at changes that have taken place in water management over the years. We, first of all, we managing basins in a form of a river basin development, so that development term already suggests how this management took place, we shaped river basins to suit our human needs. So, the traditional method is of water provision and in most of the cases, it is purely technical engineering based approach. What it, it is lacking and why it had to be replaced? It is unable to provide sustainable solutions to the going mismatch between water demand and supply and the, therefore, arising conflicts from this.

So, the changes, which have taken place and are taking place are towards an integrated water resources management and a sustainable river basin management. The reasons for that are, because easily accessible water resources have been exploited, other sources, which we have to capture now to provide for our demands require more technology and they also affect more people. So, there are many more social, technical and financial issues and ecological issues around finding and tapping into new water resources.

Those water projects for at least require today much more negotiation, extensive environmental impact assessments and there are also stakeholder participation. So, in addition to this we first use and find and tap into more and more water, water resources to supply a population of a country or a district administration. Transboundary river basins become more relevant and new issues come up, which require for instance

international and national regulations to match institutions to match and it, for that reason also requires institutional capacity.

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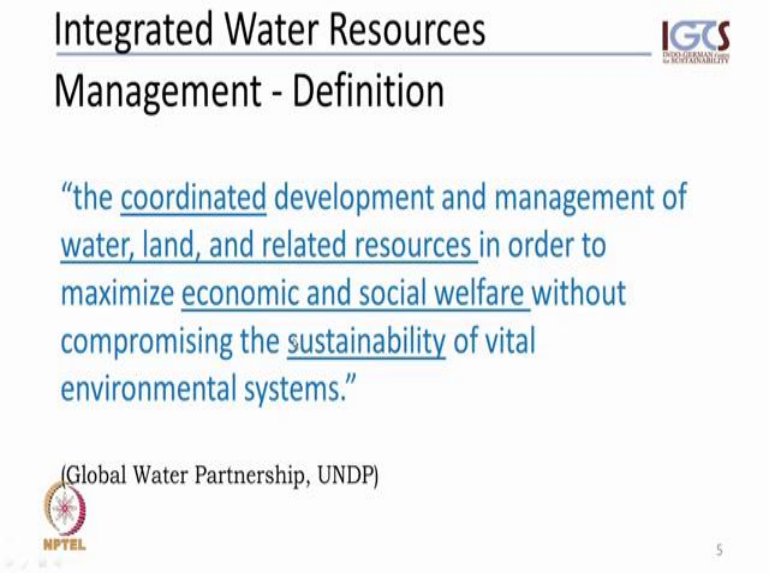

So, let us define a seal or look at the definition of integrated water resource management. It, we are using here the definition brought up by global water partnership and which is the coordinated development and management of water, land and related resources in order to maximize economic and social welfare without compromising the sustainability of vital environmental systems. So, this is a very compact definition and it includes many different dimensions, one is a coordinated development.

So, it is not supposed to be a one lead, one dimensional or one power decision taking process and it should be a coordinated development. It also puts water into the context of land and other related resources, which depend on water and land and it includes our social and economic dimension, our welfare and the future of our planet in a whole. So, we may not like the term integrated water resource management, it has been abused quite widely, but it essentially comes down to the same definition as the one that we would use for sustainable water resource management.

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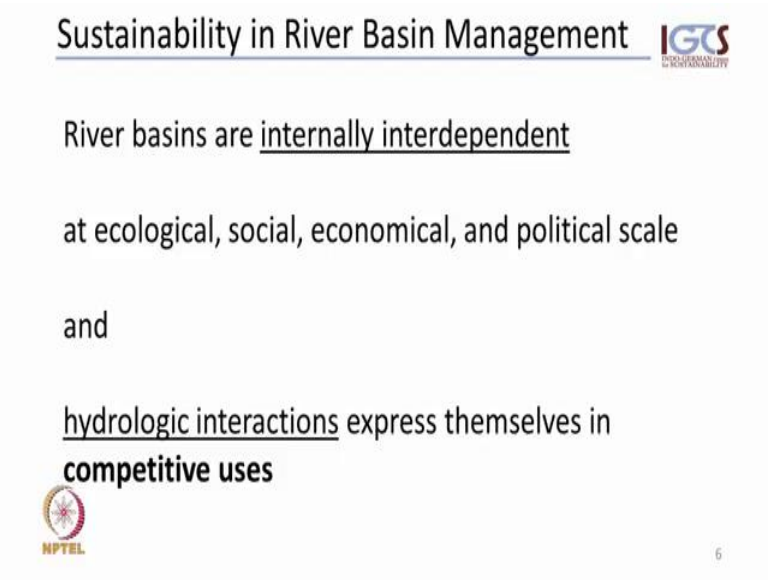

Now, let us look at sustainability in river basin management. Why this? River basins are internally interdependent from source, from the spring, across the landscape to the data. All of this is connected from an ecological, social, economical and political scale. And the hydrological interactions, the water usages express themselves in a competitive use. But an upstream user, we has been doing with the water, polluting the water, extracting the water, for consumptive usages, will not be available any more for the downstream user, to put it in a very simple terms.

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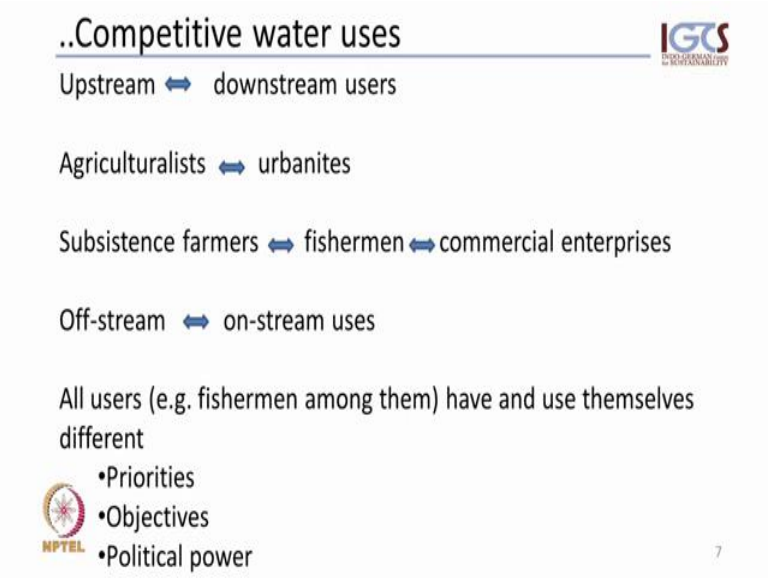

Now, we can look at various competitive water uses, as in, this list is by far not complete. The upstream and downstream users, I just mentioned. Look at the agriculturalists and the urban areas and especially the peri-urban areas, in between those two, which shift very much into this, performing into these rural areas and affect the availability of and options for water use, utilization in the agricultural areas. Look at the subsistence farmers. They are the fishermen, commercial enterprises and not to forget about off stream uses and on stream uses.

All of those uses, for example, fishermen among themselves have and use themselves different priorities, objectives and political power, powers to achieve, what I want in terms of excess to water for their specific purposes. In this we will come back later when we talk about conflict management again.

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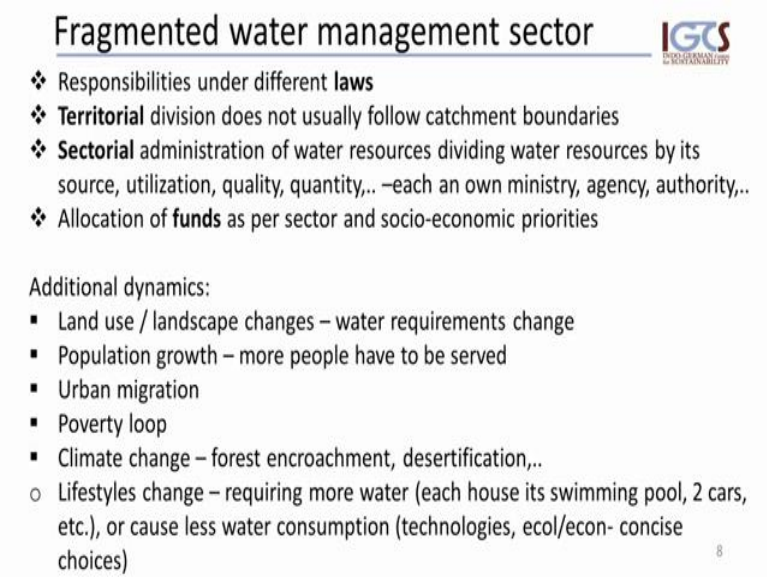

What does not have restructuring our river basin management towards an integrated ((Refer Time: 08:03)) is the fact, that our water management sector is heavily fragmented. And what I mean was, by saying this is, that responsibilities for water under different laws, there is a territorial division, which does not follow catchment boundaries or sub-catchment boundaries. There are sectorial administration of water resources dividing the water resources by funds, the uses, sources, the quality, quantity and so on and all of them are housed in different ministries or agencies authorities and so on and so

on. And the financial parts are as well the allocations of funds are conducted as per socioeconomic priorities and not basically on the priorities of water, water availability.

Now, there are additional dynamics to this, which make all of this more complex to adjust. First of all, land use and landscape changes, which come along with different, differing water requirements because the landscape and over years and was intentional. In addition, very important, impacting on these is the, our population growth, which requires societies to care for more and more people. More and more people have basic right to water and require good or better living conditions. In additional dynamic, which we cannot ignore is urban migration and urbanization as a whole, which in itself is a reversible process and has its impact on how water resources are prioritized and made available.

Another dynamics to this, our poverty loop, which is a loop in itself, we will talk about this later. And last but not least, climate change, which comes along with forest encroachment. It comes along with desertification and other aspects, which have a direct impact on water availability and the way we manage our water.

Another additional dynamic, which may not fall directly under the list, which yet is a feedback loop in itself, our lifestyle changes. So, some of the lifestyle changes, generally we assume, that changes in life style, improvements in life style require more water. For instance, in case of swimming pools, in individual houses or two cars and so on, as people lives improve. But on the other hand, lifestyle changes also can result in reduced water consumption and this is because of availability of technologies, the possibility to purchase such technologies and the knowledge or level of education is. That comes with a better lifestyle or better living conditions, which enables us to take ecological and economic and concise choices, which may take us to lower water less consumption.

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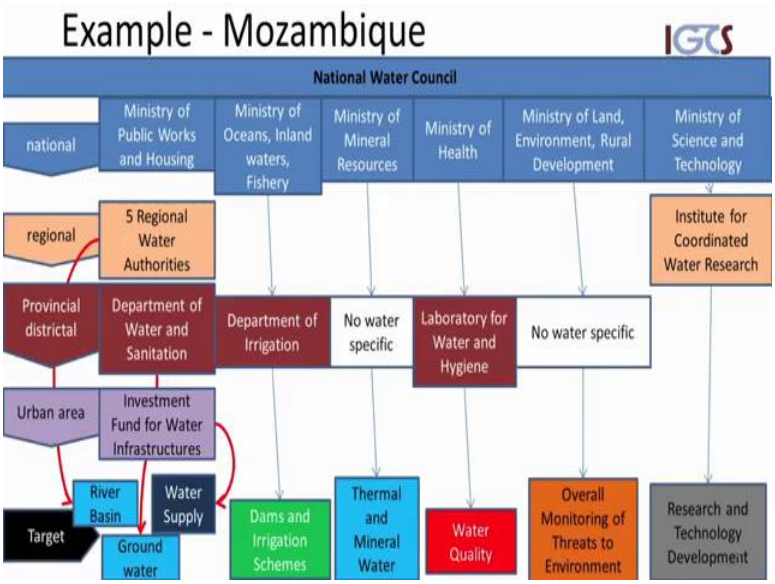

Let us look at it, an example of such a fragmented water resource management and this is just an example, we could have picked any other country. What we want to manage, what our target is, river basins, ground water, the water supply as such, the dams and irrigation schemes, thermal and mineral water, water quality, we need to monitor environmental aspects and we need to conduct research on water towards technology development, etcetera.

Now, on the top level is a national water council, which brings together base line ministries operate at base levels, at ministerial levels, at national levels, at regional, at provincial, district level and some of them also appear to have arms in, only in specifically urban areas. Now, those line ministries relevant for all these water services, aspects of water or the ministry of public works and housing, ministry of oceans, inland waters and fishery, ministry of mineral resources, ministry of health, a ministry of land and environment, rural development and the ministry of science and technology. So, these already demonstrates some of the challenges.

So, at the regional level, again, there were some regional water authorities set into first, which are responsible for river basins as one of the target. But, it does not include all of the other aspects of water as separated out here and then, we have at regional level also an institute for coordinated water research, which is supposed to conduct research across sectors and water components.

And then, we have at provincial level several departments dealing with water, water and sanitation, irrigation, hygiene, water quality, but not all of the aspects are, let us say, presented at provincial and district level. So, some of the aspects, if I need a water license for, to extract mineral water, I have to go to the national level, I have to directly to the ministry of mineral resources, as an example.

So, we have just for urban areas an investment fund for water infrastructure, which taps into the water supply and also the ground water as a source of water supply to specifically urban areas.

So, let us remember, Mozambique is one of the rural countries, 85 percent of the population is living in rural spaces, where some other priorities were set in this specific case. So, this is an example and probably we would try to do this for India, one slide would not be sufficient.

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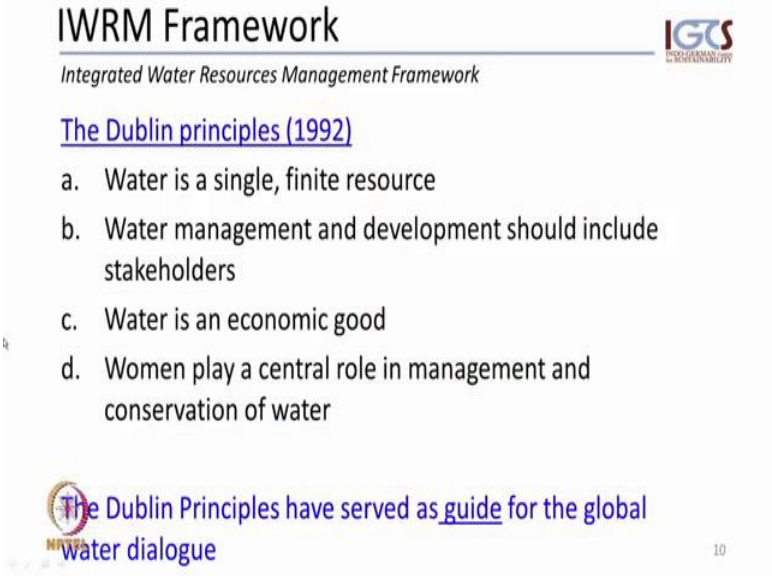

Now, let us go back to the integrated water resource management framework. And, what guides this framework are the so called Dublin principles, which of your first one is, water is a single, finite resource. The second is, water management and development should include stakeholders. The third one is, water is an economic good and the last one states, that women play a central role in management and conservation of water. Those are principles. So, this is not a recipe and as such should really only be used as a guide.

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Now, the integrated water resource management frameworks deals with all water in its spatial and hydrological dimensions. This is what makes it useful in application. It deals with all interest from a social, political, economical, cultural dimension. It uses an all stakeholder approach. It includes or deals with all the levels of administration within one territory as well as across national territories and it includes all relevant disciplines from an organizational, professional and scientific context.

So, how this is supposed to work? It should work on a case by case approach and in some countries, one or the other of these aspects may be more pronounced, more important or more developed, more established than some of the others. So, this again, nothing that puts this into a force unless it has been developed and adjusted to the real world situation.

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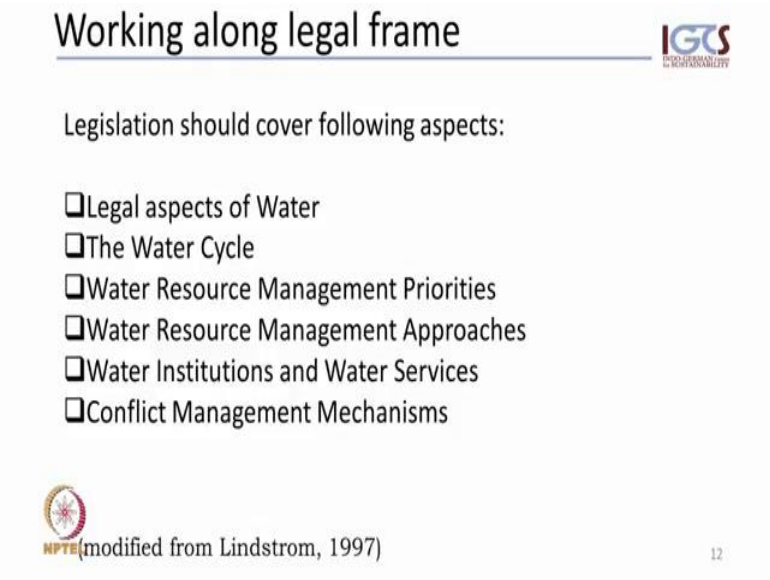

Now, we talk about river basin management. In any type of management it is important to work along a legal frame and to know that legal frame. In terms of water management, the water legislation should cover at least the following aspects, that water, law of water, water legislation should include the legal aspects of water, it should define water, to whom that water belongs. It should take the water cycle as its foundation. There should be something on water resource management priorities, which means, how is water being allocated. Why and when the water resource management approaches should be clearly defined in this legislation.

The water institutions and water services involved in all this should be laid down and that should be a clear definition of how conflicts should be managed, if they arise.

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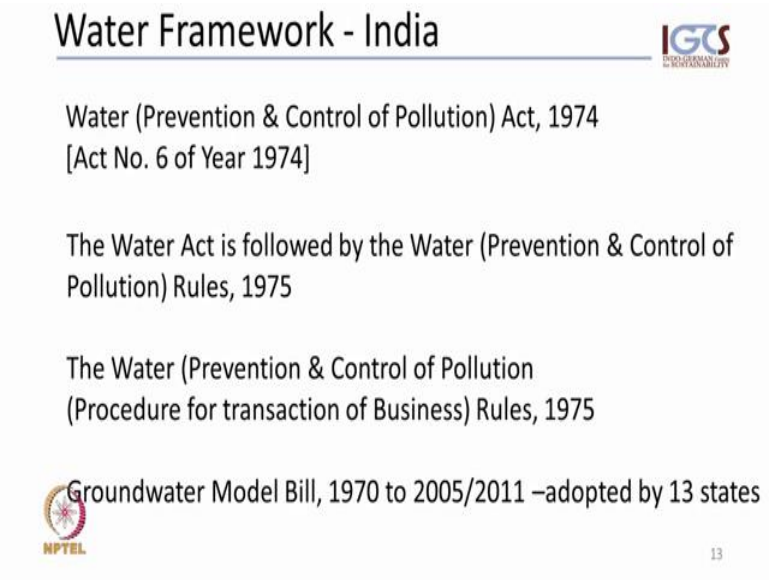

Now, having said this not all of the legal legislations have all these aspects and if it is on paper, it may not be implemented exactly this way in reality. Let us just look into some of the aspects of the water framework. In case of India, because this is what most of you will the interested in, there are some basic documents, which are relevant and valid till today. The water act of 1947, the water rules on prevention control of pollution, that came into act in 1975 and an addition on prevention and control of pollution procedures, which also came into a section in 1975.

And then, we have separately to that ground water model bill, which was came up on 1970 and has been reworked and changed over the years. The latest version as of 2011 and was adopted by13 states of India.

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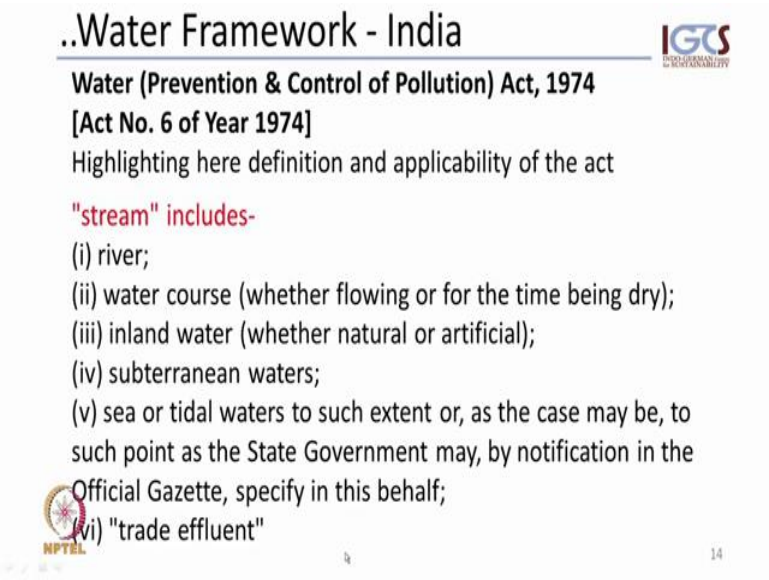

Let us look into some of the details of this and especially let us look into the definitions and the applicability of this act. The definition on stream and this is the only one dealing, specifically the water aspect. If you look for a definition on water, who, to whom water will belong, who handles water, you will only find the following definition.

What water as such in this act will deal with it is on a river, water courses as a flowing or time and the inland water means including lakes on subterranean waters, which are our groundwater, sea or tidal waters and others if defined by the state government. So, wetlands, for instance, are not included in this specifically, but have been dealt within more recent legislation separately.

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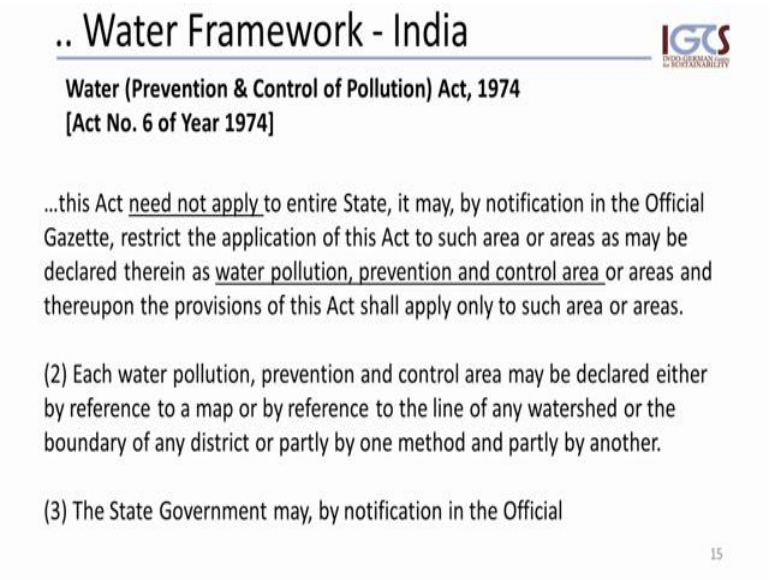

Now, how and when this is act applicable? What is stated out of the coming from the text directly? It really says, it is not, it does not need to apply to an entire state, it, the act may be restricted to a certain areas, which may be defined as or declared as water pollution, water prevention or water control areas. And only then, the entire rest of the act will apply to just that part of the land surface. So, and it states clearly how such a declaration of land protected under this water act should be proposed and declared by the state government.

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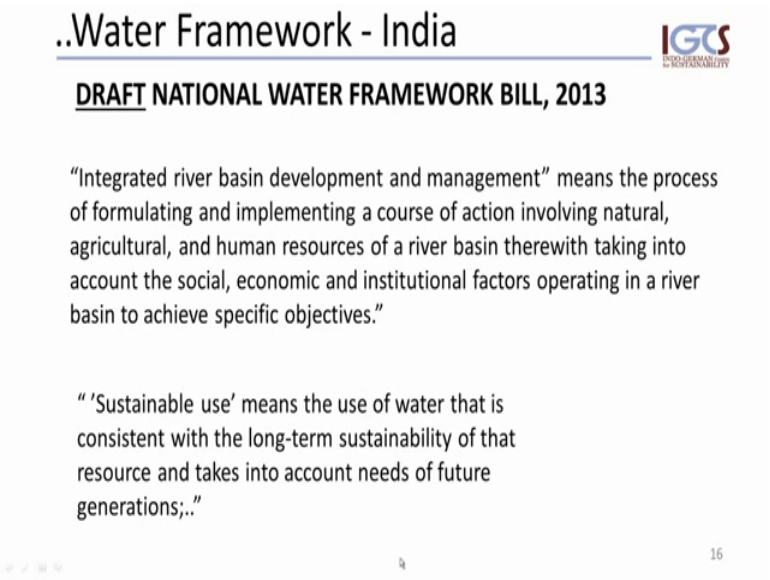

Now, there is alert overdue on this water act, which was, which has been recognized. And for that reason a draft national water framework bill was drafted and which is failure modern. And taking into account all these aspects of a complete water legislation as I have mentioned before. It, for instance, proposed integrated river basin development and management as the process, as process in itself. It also defines sustainable use of water in a, in a very modern, very, however it is a draft. So, it is not in force at this moment.

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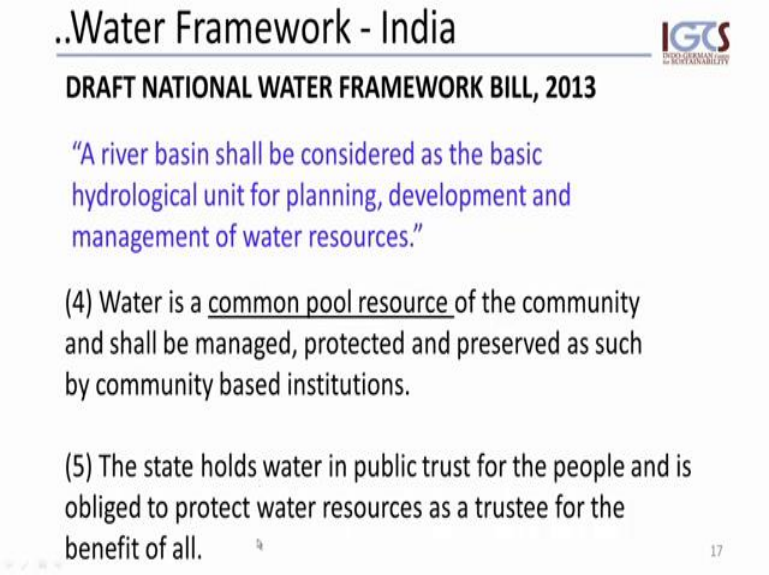

It also defines river basin as it suggests river basin as the hydrological unit for planning development and management of water resources. It also states, that water is a common pool resource of the community and shall be managed, protected and preserved as such by community based institutions. And this is one of the major cracking points, which probably, which come with, come along with major restructuring and the forms, was in the water management sectors itself and that is probably one of the reasons, why this is a draft document.

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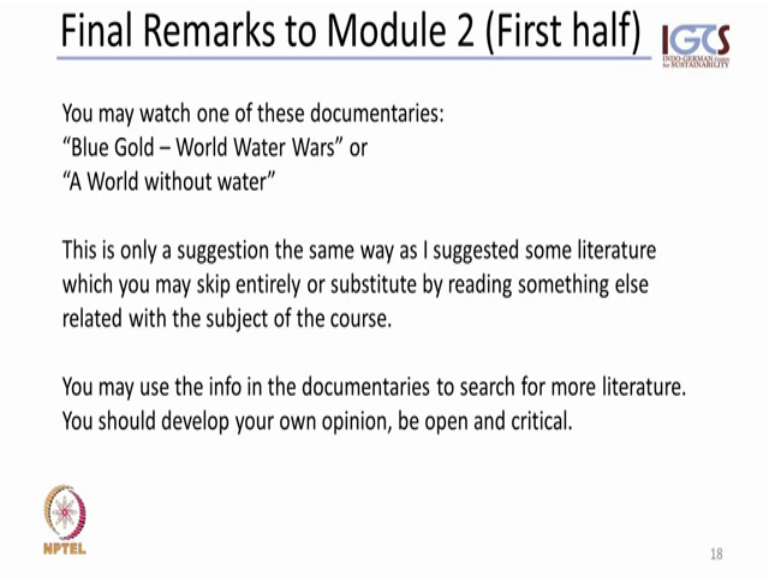

Now let us wrap up our first part of module 2. I would suggest you to watch one of the documentaries, Blue Gold, for instance, A World without Water. I am suggesting those just like I am suggesting literature to you. You may read it, watch it, skip it or you may read and watch other similar literature or movies. It is simply intended to, for you to usage, to find ideas for more literature, to read up more, to become more open and form your own opinion. You should be open and also, you should read and watch it critically yourself.