agMOOCs
Water Security Assessment
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We have seen availability, demand and how much will be the excess our deficit, but there is a need what is the water security which is for my region is important.

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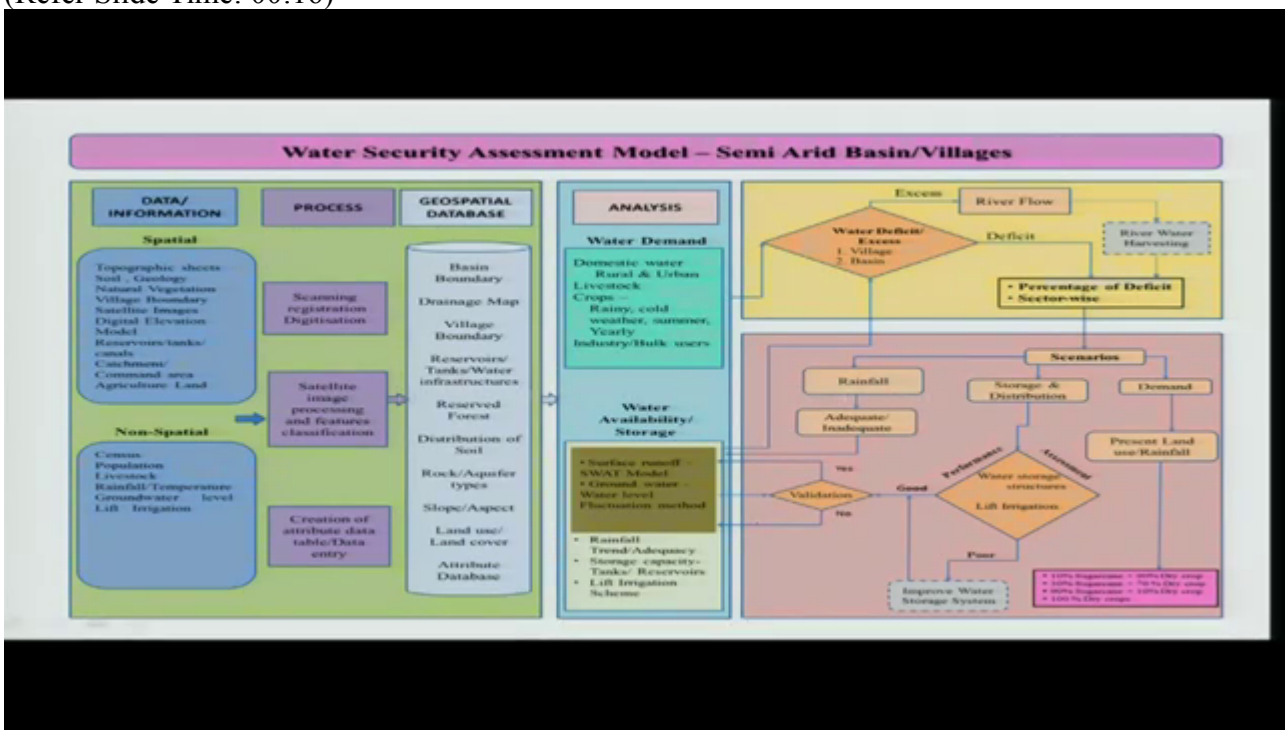

For that purpose what is needed is the one method which people are using it about the water security assessment model and it is normally useful or used in the semi-arid villages. So this shows about geospatial information and information collection and this is about the water available there is a surface, runoff whatever we were talking about we are, here we are combining all the things whether how much is the water security, whether it is a positive whether it is a negative conditions. So this is by analyzing the water availability, storages, rainfall information then the demand information, then each water storage, whether structures they are good, they are bad or whether it is to be need to be understood. And so based on that the storage system, the security can be improved by improving the water storage systems or water usage system. That is what this security system indicates.

It is not only for agriculture, because why we are emphasizing only on the water on a different scale is, water is the main source for all the crop productivity activities, because that consumes the major what are available in this planet. So that is the reason why we are always insisting on a water; if there is a water then agriculture is possible, plant growth is possible. And no other thing, even fertility can be improved, but without the water agriculture production is very less.

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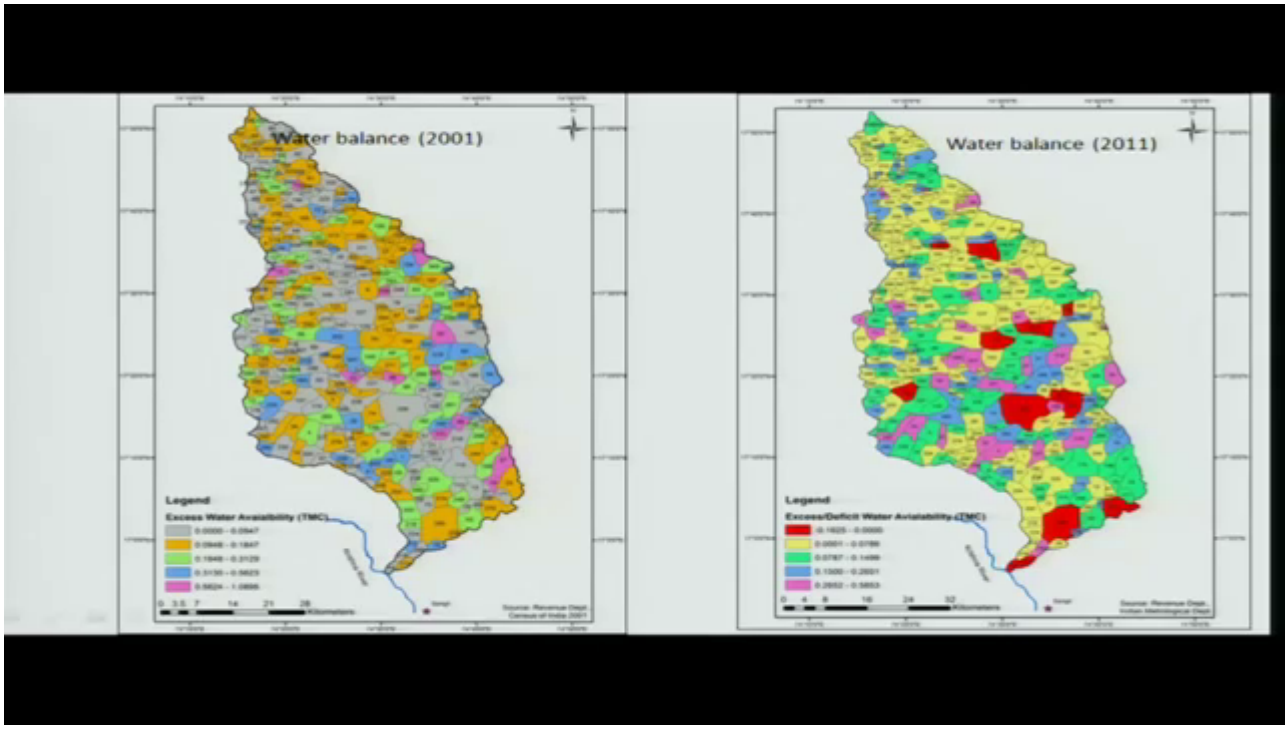

Now, this is about water balance. Again what is given here is and the river basin there are lot of villages and these villages what is the excess or excess water availability which is available under the different villages based on the rain fall of 2001 as well as 2011 of that kind of that nature. Now what is it different here is, you have a water system, you have a canal and the canal has got a buffer that is what the buffer which we try to do it depending upon the catchment which it is done, where it is activity. And these are all the things where you have got a tank and the tanks and how much you have area, buffer areas it is supplying water for its growth. That is what we try to do it. One is 700 meters and another is a 1000 meters. So this is the buffer. If there is going to be enough water this will be able to supply to this area assuming that 80 percentage of the area can be brought under cultivation as well as for the drinking water purpose.

Now what we have seen is the daily requirement and this is the high water for a yearly requirement. And if you look at it these are all the three hotspot areas where the water demand is very high. Whereas other areas where the water demand is less and maybe one reason is the population is not high. Second thing is the cultivation is also not high, whereas in this area population and cultivation they would be on a higher side. Now, when you say population high crop area is very less then I have to cut short somewhere so that I use the -- within the available water I should be able to make -- I have to live peacefully.

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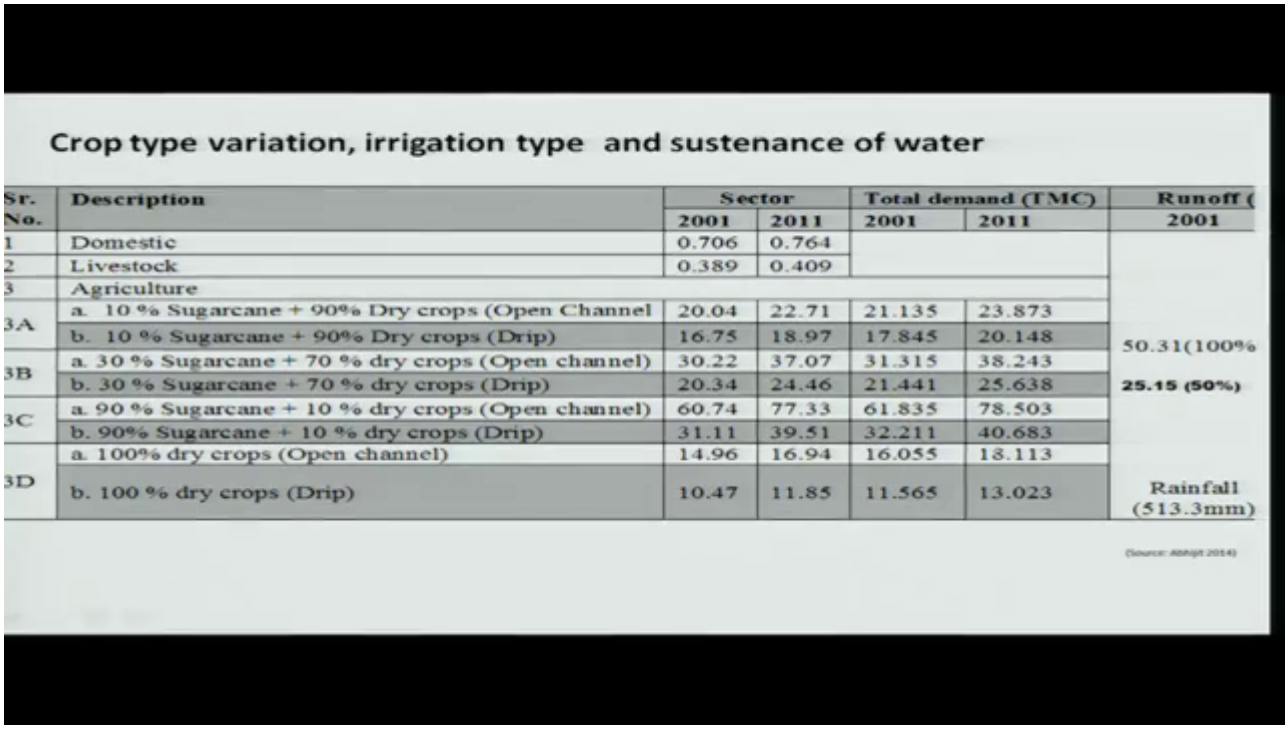

Crop type variation, irrigation type and sustenance of water

Sr. No.	Description	Sector		Total demand (TMC)		Runoff (
		2001	2011	2001	2011	2001
1	Domestic	0.706	0.764			
2	Livestock	0.389	0.409			
3	Agriculture					
3A	a. 10 % Sugarcane + 90% Dry crops (Open Channel	20.04	22.71	21.135	23.873	
	b. 10 % Sugarcane + 90% Dry crops (Drip)	16.75	18.97	17.845	20.148	50.31(100%
3B	a. 30 % Sugarcane + 70 % dry crops (Open channel)	30.22	37.07	31.315	38.243	
	b. 30 % Sugarcane + 70 % dry crops (Drip)	20.34	24.46	21.441	25.638	25.15 (50%)
3C	a. 90 % Sugarcane + 10 % dry crops (Open channel)	60.74	77.33	61.835	78.503	
	b. 90% Sugarcane + 10 % dry crops (Drip)	31.11	39.51	32.211	40.683	
3D	a. 100% dry crops (Open channel)	14.96	16.94	16.055	18.113	
	b. 100 % dry crops (Drip)	10.47	11.85	11.565	13.023	Rainfall (513.3mm)

(Source: Abhijit 2014)

For this purpose, there has been proposals like reduce your water consumption, ready reduce your water wastages, reduce, save everything. That is what the human related consumptions can be controlled. Whereas the crop related consumptions can be controlled by a different method, by feeding the requirement but not wasting the water as well as feeding it more. So now what we are trying to do is we are trying to fled the field so that the water flows plants as well as the rest of the areas, rest of the areas also get saturated like a plant areas, plants only use it, whereas rest of the areas either it gets evaporated, water is getting evaporated or it goes for closed down.

In that case what the agriculture people are doing is though agriculture you have that drip irrigation scheme and also the deep irrigation schemes have come up in a big way and it is not yet fully operational in many of the areas, but the selective areas it has been done. Now assuming the requirement from this basin, domestic and livestock is like this. Now what I can control is, I can control what I can conserve water by feeding it to the crop areas. Now what is being done is it is done an open channel and there are -- the crop area has been converted into, they has been grouped into three categories; one is the existing conditions with wherein 90 percentage of crops are dry crops that is water less requirement and whereas like a 10 percentages of this area is sugarcane growth. So sugarcane one year, dry crops only four months.

And similarly the one thing is if you give for the same crop area of this region, if you give open channel, so how much is the water requirement, and if it is going to be a drip what how much in the water requirement which is needed. Then second thing is the sugarcane content is increased, the dry crops have been increased or the third situation is sugarcane is increase and dry crops are been decreased and this is the scenario which we try to simulate and how much will be the water requirement if you practice it either this way or that way what would be the scenario in the future. And the last and the extreme condition is make everything only dry

crops and make them either by this channel area are for the drip area. This type of sectors requirements are given over here. So there is as you could see there is lot of water savings is possible. So in this case 10 percentage sugarcane it is going to be three whereas 100 percentage dry crop water requirement has come down to 18 TMC. So this type of agriculture practice, irrigation, when you want to give a water, is open channel methods as well as the drip irrigation methods, if you adopt then there will be water reduction, water demand from these villages can be minimized and at least crops will give better yield when compared to both the crops. If the water is not there then sugarcane also get suffers and the dry crops also suffers.

Whether you want a situation where the crops in total failure or you go for a crop which is a dry crops which you will be able to get a better yield with the low water availability, when there is a low water availability what will you do is this way. Now, what is the thing which you are able to say is this is possible in the 513 mm of rainfall this type of situation is okay and whereas the other areas you will be able to see a different results. Now what are the options which are available with us for with reference to this type of water manage in this both the sides.

We have crop area is same, only the crop demand is more here and there, as well as the type of irrigation which people do is channel or a drip irrigation, those facilities are also available. So if we have to have a sustainable growth or sustainable development from the agriculture sector there is a need to change; the one thing is the suitable crops which will be -- which is suitable for the particular agro climatic conditions with change in the drip irrigation would fetch much more crop field per unit investment is more. Whereas when you want to have a higher crop price for like a sugarcane that investment also it is likely to be on a higher side. So it is (inaudible 8:34) because of the vagaries of the monsoon on a rainfall and low or poor availability of groundwater conditions, so water requirements by these crops may not beadequate to the extent where the growth potential is assured. So that is what we have seen in this lecture and thank you.