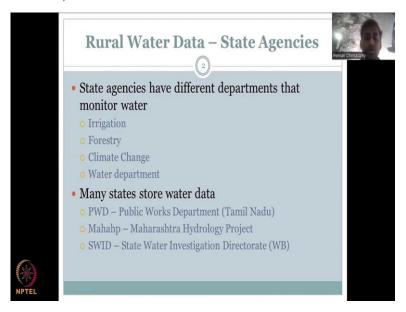
Rural water Resources Management Professor Pennan Chinnasamy Centre of Technology Alternatives for Rural Areas Indian Institute of Technology, Bombay Lecture 52

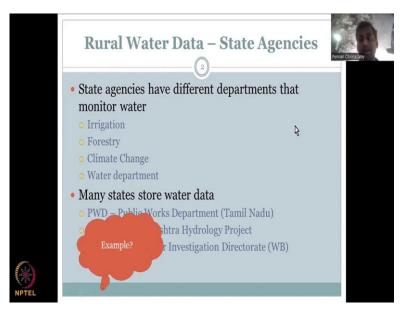
Solving Case Studies in Rural Water Resource Management Part 2

Hello everyone, welcome to NPTEL course on Rural Water Resource Management. This is week 11, lecture 2. In this weeks lecture, we have been looking at data for Rural Water Resource Management. And while we discuss the initial part of the course, I have already mentioned that there is lot of data issues, and that is why we have seen different agencies and different resources for data. What we found out in the last lecture is there are publications and NGO's where you can mine the data, which means you have to read them, understand the data that they have used, the methodologies and you can take the data.

There are two types of data mining one is you take the data from which they took the data, and the second part is where you have their results coming into your work as data. For example, if they give you a rainfall estimate and runoff, online you could get runoff like discharge from the government data and also other data sources. However, you can also get the result from these papers as your data. Now, let us go on further and look at the other sources of data.

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While an introduction for data, I mentioned that there are both NGO's and publications reports as knowledge products and there is physical data, these are the two types. In the physical data, you do have state agencies and that is what we will be focusing on today. So, state agencies have different departments that monitor water.

Every state the terminologies might be different, but it is your duty to find which is the state agency that monitors the data? Some of the examples are given below, you have the irrigation department, the forestry department, climate change, water department, because for irrigation water is the major input because irrigation means application of water from other resources not your rainfall, irrigation.

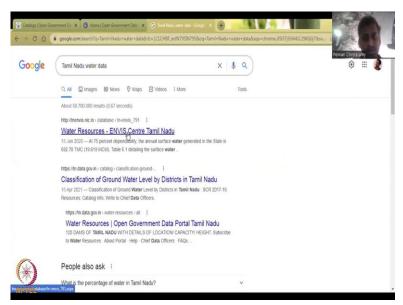
And then you have your forestry departments, and then you have the forestry because it has lot of water structures and or land use land cover, which can help in assessing the water budgets, the climate change department, the weather department and water department. The weather is IMD where you get rainfall data and humidity data, temperature data to estimate your different parameters. Whereas, your water department has more data on the actual water like discharge, surface runoff, groundwater, those kinds of things.

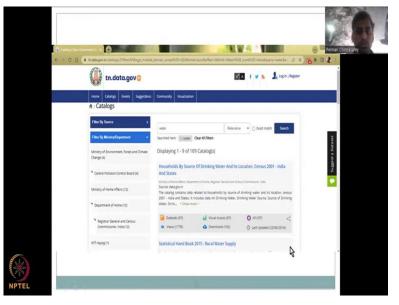
So, there are some examples for these databases. Some examples are PWD, which is the Public Works Department from the state of Tamil Nadu. Then you have the MAHAHP which is the Maha Hydrological Project or Maharashtra Hydrologic Project. And then you have SWID which is the State Water Investigation Directorate of West Bengal. The second one is for sure it is Maharashtra.

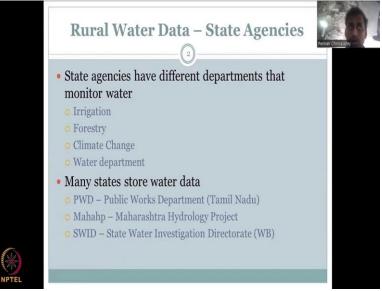
So, you will see that certain states will collect data based on their need, and the budgets are allocated similarly. So, it is on the mandate of each of these states to collect water and manage water sustainably. So, please understand that these are important aspects for groundwater management and other water management in the rural setting and the data comes from multiple platforms. The state agencies have their own rules and regulations for monitoring, which is may not be the same for the central government. However, you do have other resources and activities that can be part of it.

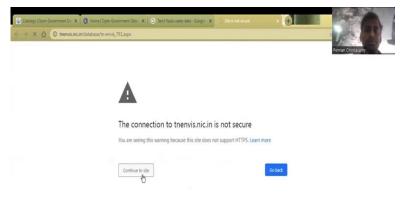
Each of these agencies has a considerable amount of budget, manpower, and officials. In fact, some of these agencies are guided by IAS officers, where they have a lot of experience on the field in working with these systems. And sometimes it is led by the state collecterate or state officers who are like IAS carriers. So, moving on, we will have an example of a state agency and see how data is collected.

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So, the one state agency I would go in and check is the TN data.gov.in and you could see that the central database is the same. So, you will not have different databases in different websites that was initially done, but nowadays, all these databases are stored in one repository. So, it is your duty to go and search for these data in Google and find it.

Why I am asking you to search through a search engine is because there is a possibility that sometimes the links change for which you need to keep updating yourself. For example, a WRIS website I said, initially it was a different website and now it has changed. So, it is up to the user to always keep updated on the data portals.

I will go through this website and then showcase some of the data so that you could find the data sets, etc. There are also multiple agencies and websites such as the India Water Portal, which also store these kinds of data and sometimes you have to pay for it. Even state agencies they would require some funds for example, the PWD I mentioned in Tamil Nadu if you are using it for research and academics, you could go through the head of the institution or your professor, write a letter and you could get to these agencies, state agencies and try to see if they give the data for free. Otherwise, it is not as expensive as the other data. So, you can still buy it but however I request you to please try to find if it is low cost, if it is high cost please go through your academic institutions. If you do not have an academic institution, then you can go talk to them why you want to use the data.

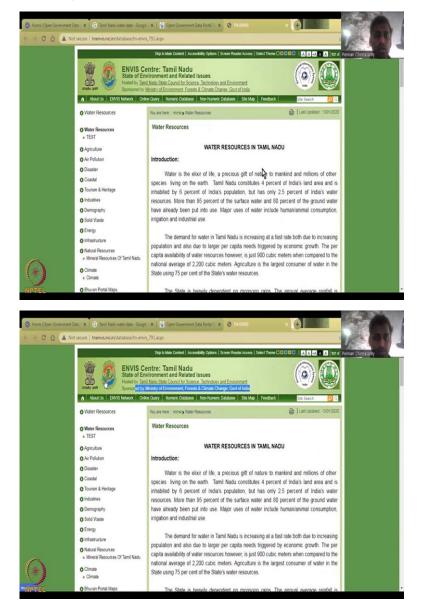
For example, the village development plans, master plans if you want to work on your own village for water access, etc, then the price will be definitely different. These agencies are normally kept in the capital of the state. For example, the PWD offices are in Chennai, the MAHAHP projects are in Mumbai and the SWID is in Kolkata. So, please try to see if you have access to these locations. If not, please try to see if you could meet them, normally emails will not work, you will have to go physically and talk to them. So, go physically talk to them on why you need this data write a good letter, why you need this data, what are you going to use it for and specifically what data from what range?

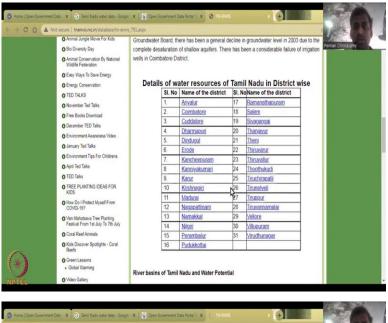
For example, if you have a boundary, watershed boundary, you can ask this is the boundary, if it is a village name, you can put it as a village name. So, that is a village extent you want and clearly mention that these are the data I will need for these many days. For example, you say groundwater data; I would need it from 2000 to 2022. Only some agencies have put it on the WRIS website, which is the Indian government website, most of the other agencies have not added these data online. So, please do not say that all the data is not available. It could be

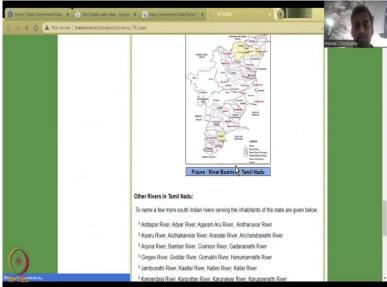
there, but you need to go and visit these agencies and find it. Not all are online because of sensitivity issues, cost in hosting them online. They do not keep the data, but they do share the data.

Let us take an example, Tamil Nadu government data I am going to go now. So, what do you see here is just a normal Google account, I have opened just a Google web page, I want to say Tamil Nadu water data. So, what you see is TN ENVIS center, which is a data portal for the Tamil Nadu government, sometimes they get these warnings, you can just click on it. And the other catalog I mentioned is the tn dot gov dot in. So, once you click the tn dot gov dot in, this web page will come. It is little bit slow; sometimes it just needs some time.

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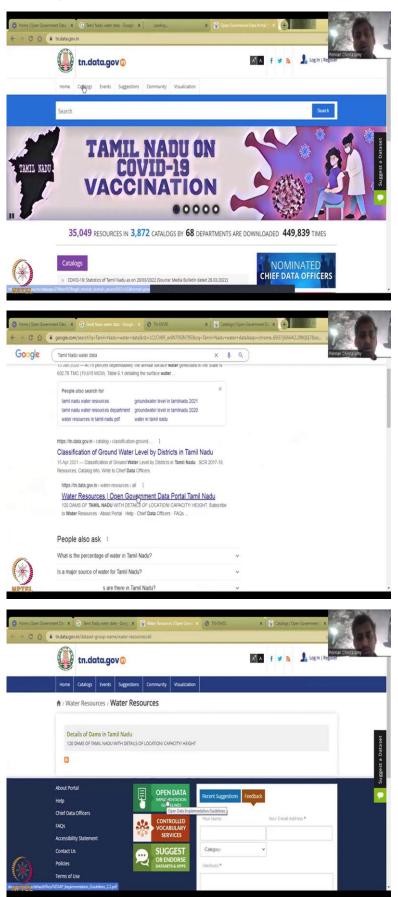


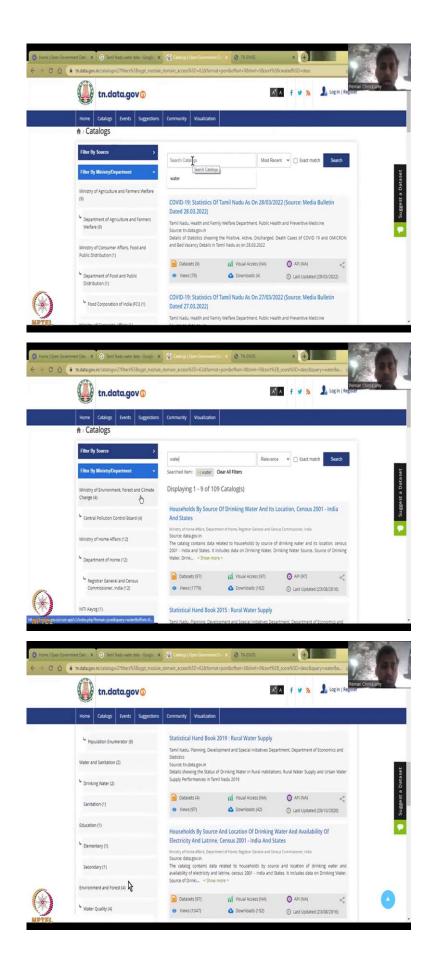


See here, the Tamil Nadu ENVIS, which is your environmental kind of department, hosted by the Tamil Nadu State Council for Science, Technology and Environment, supported by the ministry of environment, forests and climate change government of India. So, you can clearly see that there is a state agency, which is the Tamil Nadu State Council, and it is supported by the central government, so that is where the India logo and the Tamil Nadu logo.

Environmental Information System, which is this and you could see here, come down and see what are the different datas that is available, details of what resources that say, I would like to see Coimbatore, and then the river basins and other data, the maps, all these things you can find. So, sometimes these websites are not possible to open because sometimes they are not working. So, if you have these kinds of issues, do not worry about it, you can also go to the tamil nadu dot gov dot in. I am just going to keep it up, so that the other websites can open.

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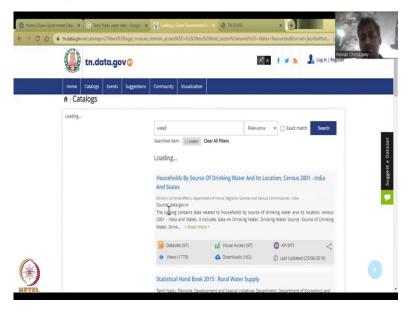


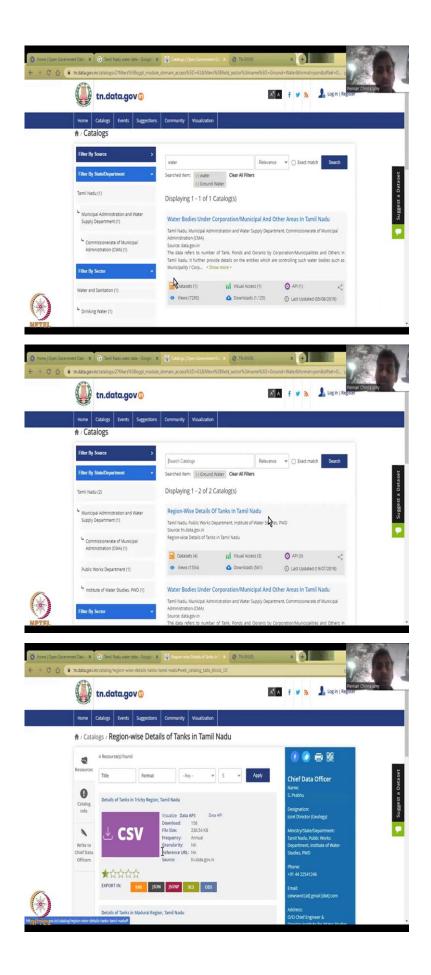
And then here, you can go catalogs, tamilnadu dot data dot gov dot in, which you saw here, so tamilnadu dot gov dot in, and this is a second resource, water resources. So, you have these resources, and this Tamil Nadu government came, and details of dams in Tamil Nadu can be there. So, all you have to do is click Open Data Implementation, I will show it again, in the website, you can just open data. See, this is not the same for all state website.

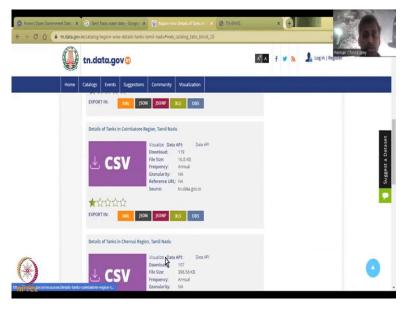
So, please understand that I cannot show all the different states in India and their watershed, the water data, it is because that would be lecture by so on, so every week, I have to take one state. So, you would just go here and find where it says data, there sometimes will be a search box that we move my screen to see there is no search box, but you can click the open data. So, which I have clicked and then catalogs.

So, I click catalog and this has opened, there is a guideline and then there is a catalog. So, in the catalog, I am going to just type water. When I type water, there are multiple subdivisions for it. So, it is coming in the Ministry of Environment forests and climate change as I said that the ministry is from the central government. You can do it by source, you can do it by state government, Tamil Nadu, and you have the municipal administration of water, Chennai water, then municipal department of economics and statistics. You can filter by sector which is census population drinking water sanitation, environmental factors, water quality, water resources, groundwater, etc.

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Let us click the water resources and your water bodies in municipal and Corporation areas in Tamil Nadu which is very important the WRIS is may not have all the water bodies mapped. You can do the groundwater water bodies have you done so I am just clicking the ground water to see if it is the same thing. So, you can take this out and you can see regional wise details of tanks in Tamil Nadu. See these tanks we have already seen in the class how important they are and if you would like to see how these tanks behave and model it in your system, do water budget is very important to understand these things.

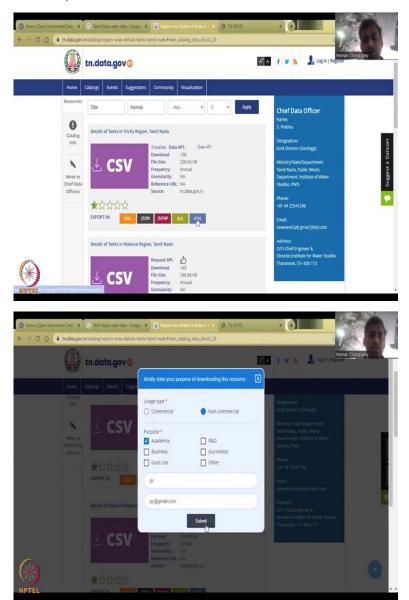
So, you could click it and it will ask you what type of data you would like there are photos for datasets, and you can download them for free. Similar to the WRIS website, you will be asked with some questions on, like, why you want to use it, how you want to use it, those kind of things. So, for example, details or tanks in Trichy, region, Madhurai, Coimbatore, etc. So, there is only four datasets, not all is there.

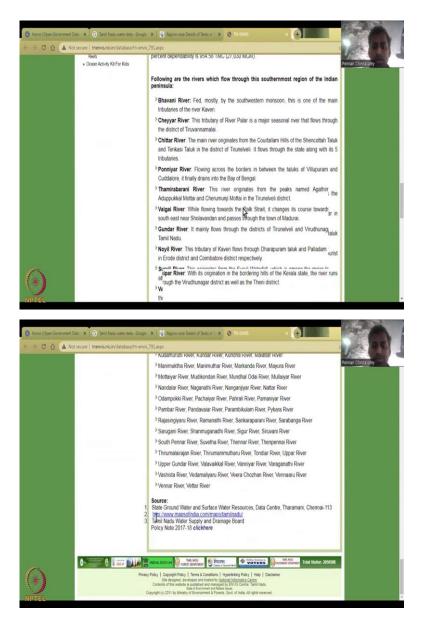
As I said, there could be two issues. One is they did not put everything online and the second is that maybe it is sensitive. So, they keep it in the office and as I said, this is the office address and stuff where you can go and find them, try giving them a call, email sometimes may not work, so you can try giving them a call. Or if you have any friends in the state's office near the office, you can ask them to go and meet the chief engineer.

And chief engineers normally will tell the rules and regulations which is why you want to use the data you have to clearly mention, a lot of signatures are required. And then you will talk about where and how the data is going to be used and then the details about the data. Normally, you will have to pay by demand draft and then they will send it by post or email. The post means like a hard disk, like a physical CD ROM they will put it or they will ask you

to come and take it in a pendrive or email from a Google Cloud or any other cloud they will share.

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So, these are the different types of format you could export it in, an XLS is your Excel, so let us click Excel. And it will say the same thing do you want to use it for commercial non-commercial, say commercial means you are going to use it to sell it to others. It is kind of unethical and wrong to take raw data for free and then sell it to others at a price.

For example, you have your village panchayat office and they want to estimate the rainfall so that they can plan agricultural crops. If the panchayat office requires you to collect the data, if you go to this website and say commercial which means you are going to collect the data on this website, and then you are going to sell it to the panchayat then there is an issue.

It is unethical and also an issue because you are making money out of it. So, always try to see; if you add value to the data then you can sell it for example you run a model, you put a lot of time you clean it, visualize it then it is different story but the raw data you cannot take

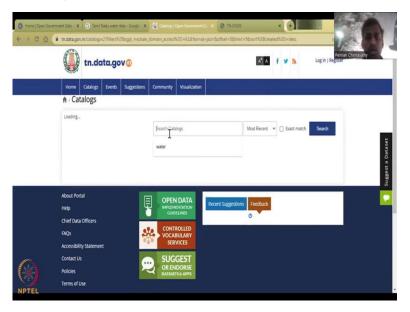
and then sell it and you will be caught if that happens a lot. So, let us say non-commercial and academic. Same thing you can give your name and when to use PC and then submit it. Here are the ratings also like what it is and how it is?

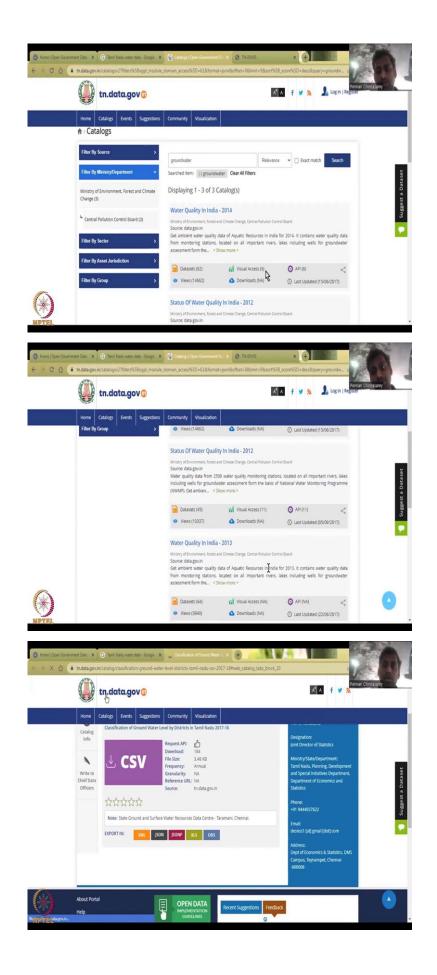
So, once another website just opens to make you download the data. I am not gonna download it I just want to show how to do it. So, there it is a data file. Let us just have a look at it, because we are here it has downloaded. So, what did we do, we do Trichy and then I am going to click it to open it, once it opens, I will share it again.

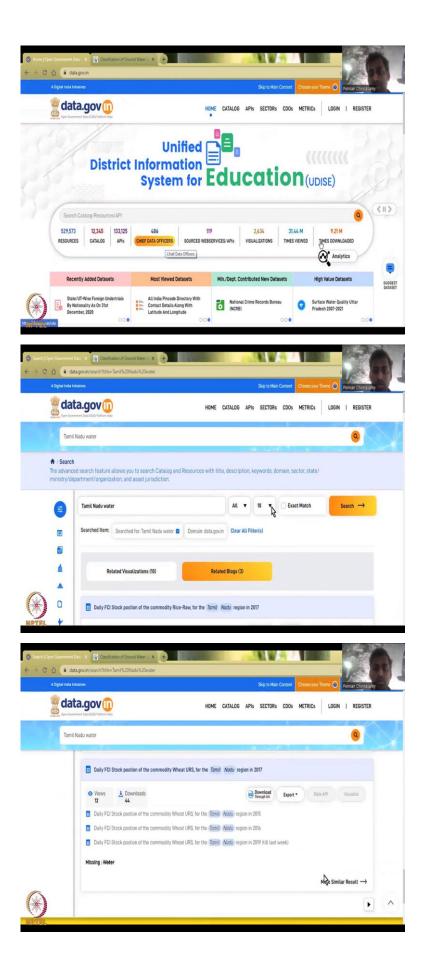
So, what is happening is the Excel is sharing and then let me see if I could open it. So, the data is already on and I would take this data and use it as needed. So, the TN ENVIS also has other data on the maps the boundaries and then maps of India is a commercial software company which they have cited here.

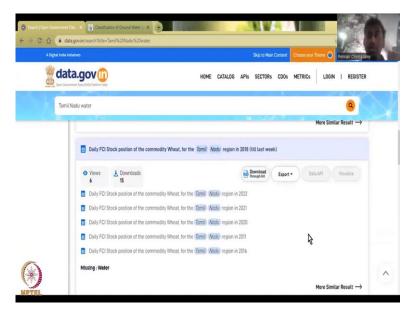
So, that is one way to do it and then now you could also I did a seminar on water data, I clicked on ENVIS not much data as they are not always the first link, you will get all the data. So, go here, I went to the second classification to dot data dot gov dot in, and then I found this page. If you want to go back, you can go back to the data catalog, you can also write to the chief data officer asking about clarification it is basically the same email, it can it can go to that email.

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So, I am gonna go to catalogs again, when this website opens, I am just going to say ground water and then water quality in India, etc, they also have some statistics, how many people have accessed it, 6 people have visually looked at it downloads, views, how many people have viewed the data, some visual analysis has been done. So, all these are there across India, but because this is for Tamil Nadu, they might have it truncated. Again, we are only looking at this state in this lecture, the central government exercises we have seen or we all already add to it in the next couple of lectures.

So, with this one more I will show is the data dot government dot in, if you look at both this website data dot gov dot in which is India's, and the tn data dot gov dot in. The only difference is a TN word which means Tamil Nadu is coming in front, because both are government agencies. So, one is a state agency supported by a central government and this is a central government that is why you see the central government logo here whereas, you see the state government logo here. This is almost the same aspect across the data platforms and you will be able to see all of this in here.

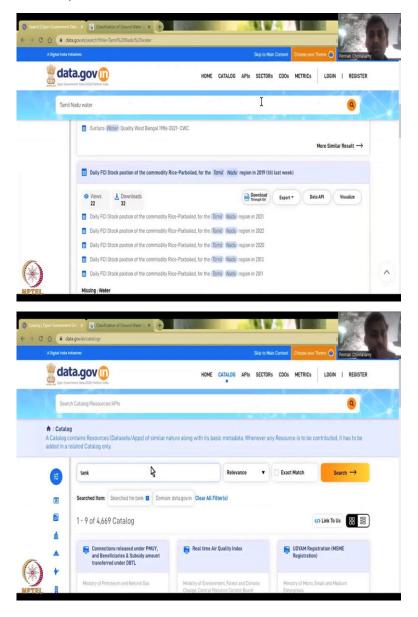
So, you can see all these data and similar to your thing, you have number of data officers, visualizations, themes, you could search the catalog here just take the catalog, let us say again Tamil Nadu water and you can get it. This is to focus on one region as I said and then here it is some data surface water quality in Tamil Nadu, how many did we get?

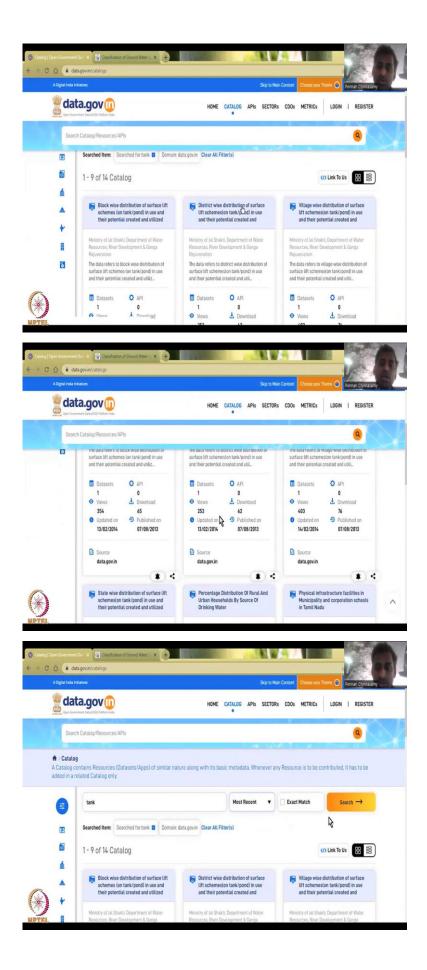
Normally the search will tell you how many and then say it just goes on it is not three it just goes on a lot and more similar results. So, daily stock Tamil Nadu, household survey, source of drinking water locations Tamil Nadu 2001, water bodies in Tamil Nadu. So, you have

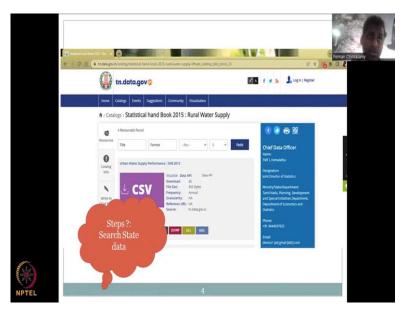
these both data in access in two different sites one has a Tamil Nadu site and then the data dot gov dot in.

Please do not get confused it is the same data government data but hosted in two different locations, both are free. So, now this is the point when you take these data for free and put it on your website and charge the money then it becomes unethical you will be sued by the government. So, be very careful what you can share for cost, do not sell something from the government for free. So, just read through the rules and regulations it will clearly tell what you can sell what you cannot sell.

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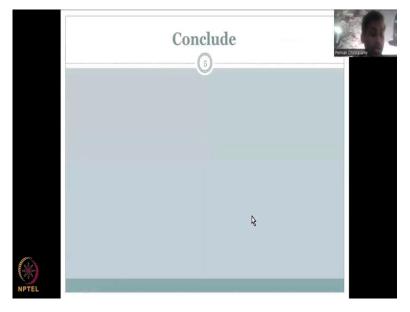
So, this is where you could do it, you can also go back to the catalog and then you can click groundwater and say tank. So, the tank work can be different in different regions, but let us say you have 1 to 14 and the data district wise distribution of surface lift schemes and irrigation schemes, tank ponds and use etc.

So, you have multiple data and most importantly, it tells you about how many dataset views, downloads and see if the download is high that means people are using it. And then you have the updated date when it was updated, mostly want to see the very recent one. So, you can click here you can go to relevance on the most recent date and then click search again then what will happen is it just reorganizes itself.

So, now you have village water wise surface flow schemes. It was a bit in 2018, still we are in 2022 slide or 4 years average difference, so we as I said sometimes the data may not be the most recent one, but you need to work on what data you have. So, reassign, realign your problem statement with the data you have, there is no point in saying no data, you need to tell what data you want to use and how much. So, we have seen this, how to search for data in one particular state website and then we have also seen how to download these data in an Excel format.

You can also go to data dot government dot in and then search for data and download. The details of the data officer which is Hemalatha, TMT is Tirumathi L Hemalatha, Joint Director of Statistics, and address and phone numbers given. This looks like a mobile phone but as I said, please do first send an email, sometimes they do, because the volume of emails a lot, but most of the time they do reply, so you could get a reply, you can talk to them and see what can be done.

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With this I conclude today's lecture on the state data sets and how to analyze them. We have also looked at how ethical it is to use the data for your research and sell it. You can sell a product but you cannot sell that data product from the government. You should do your work analyze it, make it a problem statement, etc, model it and then you can try to augment it.

This course is about solving rural water issues, but it is also important to build a capacity of people who can use these materials to like consultancies, because not always the government agencies can solve the small small issues, NGO's, for example, they could charge for these kinds of work. So, thanks a lot. I will see you the next class on more data sources for rural water management. Thank you.