Sustainable River Basin Management

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Module – 05

Lecture - 40

Part - 5

Welcome everybody to sustainable river basin management; module 5, part 5, which is the final part of our course.

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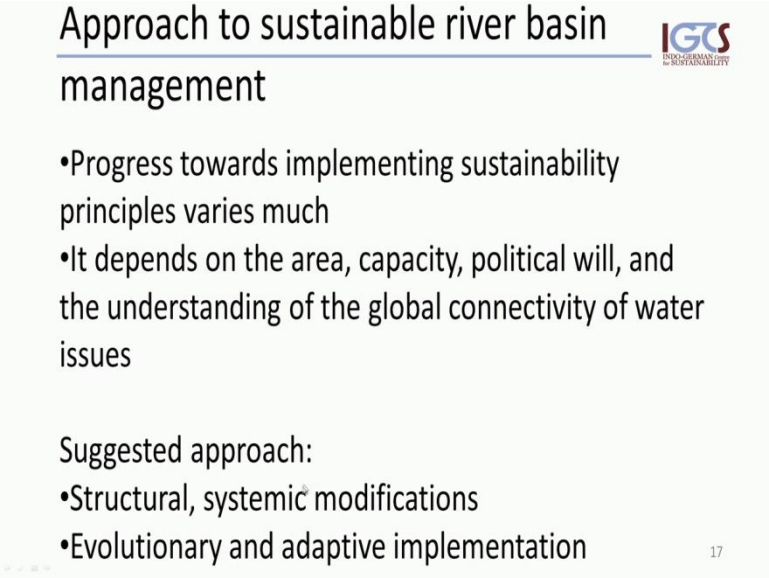

Let us talk about approaches to sustainable river basin management. How can we actually implement it? What can we do? So, we have to acknowledge that we can choose various ways of implementing sustainability principles in our river basins, and we may move faster at some point or we may take some longer for some other steps, or we may have to take some steps more serious, than may be others. We have to identify what is important and what is feasible in our specific river basin, and our specific circumstances and move continuously, step by step, through the sustainability principles.

The progress depends on the area, the capacity, political will, the understanding of global connectivity of water issues. Not all of the river basins are equally, equipped to move

straight forward and fast efficiently, towards the sustainability principle. So, we have to recognize that it is a process, which will take time and is not equally, implementable across one country or across regions. It has to be approached for each river basin individually, at very specific, very targeted. So, this suggested approach is a structural and systemic modification.

We have talked about the systems thinking earlier and the requirements of these structural changes, coming along with the systems changes. We also have to make space for an adaptive for an evolutionary implementation process. So, what is said here is that there will be no overnight change happening and also, the results will probably, not be measurable in a very short term. So, it is a momentum as with the other major changes, observed as I said examples earlier to you.

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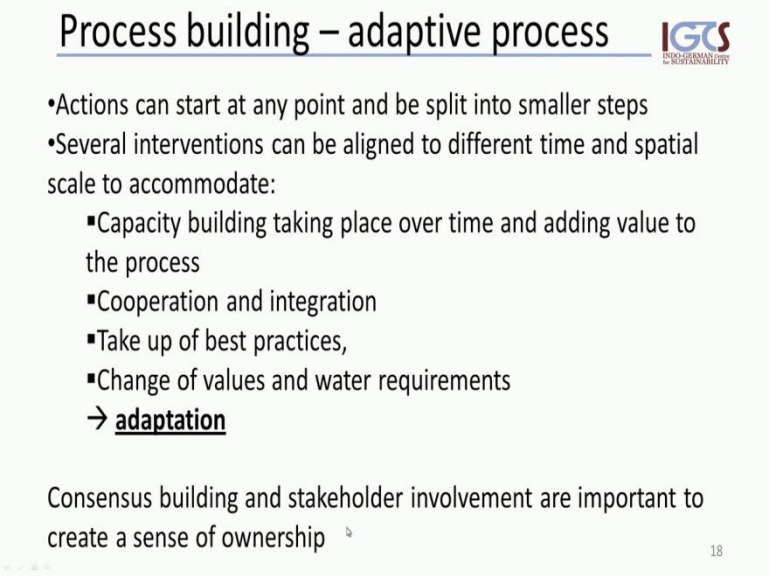

Those process building or the process building as such, as an adaptive process; that means, that actions can start at any point in time, and any location in a river basin and should be split into smaller steps that can bring measurable impacts, which are predictable and can be presented as part of the success of the changes, towards the sustainable river basin management.

There are several interventions that can be aligned to different time and spatial scales to accommodate; for instance, capacity building that will take time. People have to be trained, be learnt new techniques, which will take years for them to achieve final degree

for instance, and to bring their capacity, their knowledge to the active working environment, or it will take even longer value, looking to educational systems, starting as school children, where awareness and environmental education is built in or will be built in. Local environmental contents be implemented in local curriculum, and which will have an impact on the capacity building of processes and institutions, as well as the technological changes taking place and the technologies, which has to be accessible to institution as part of the capacity building.

So, this is taking time, but has to be started at some point, and has to be (Refer Time: 05:04) as a contribution, as a very valuable contribution, adding its value to the entire process as it is moving on. There should also be possibility to incorporate cooperation and integration efforts taking place. This is including new stakeholders for instance, or new issues of land use, which would come up as river basin development is taking place, and which have to be built into. It cannot be handed as a static process and there should be a take up of best practices taking place. It should also include the changes in values; the change of values and the changes in water requirement taking place as water saving technologies, may become available.

Water allocation principles are implemented. Polluter pays principles become accepted and, or implemented. So, it is an adaptive process called as adaptation that requires a frame, which should be developed to give space for these various processes to take place. So, there should also be a consensus building and stakeholder involvement from the beginning of the sustainability approach, to river basin to create a sense of ownership and that sense of ownership is not is in regard to the water resources as such, or to the river basin as a geographical region. In this context, it is the sense of ownership towards implementing sustainability principles tool in this specific river basin.

So, that process as such, requires people to understand and stakeholders to get involved and supported, and has a sense of ownership of this process to be successful. In many cases, this is exactly, the piece that is missing. All of these can be done and or done as money is made available for capacity building, for scholarships and so on. Training courses are taking place at large scale and so on. So, new technologies are made available; low cost technologies and people are trained again and so on and still, it is not taken up as such, because it is not perceived as a part of the process of achieving sustainability in this river basin. So, that is very important and should be at the forefront.

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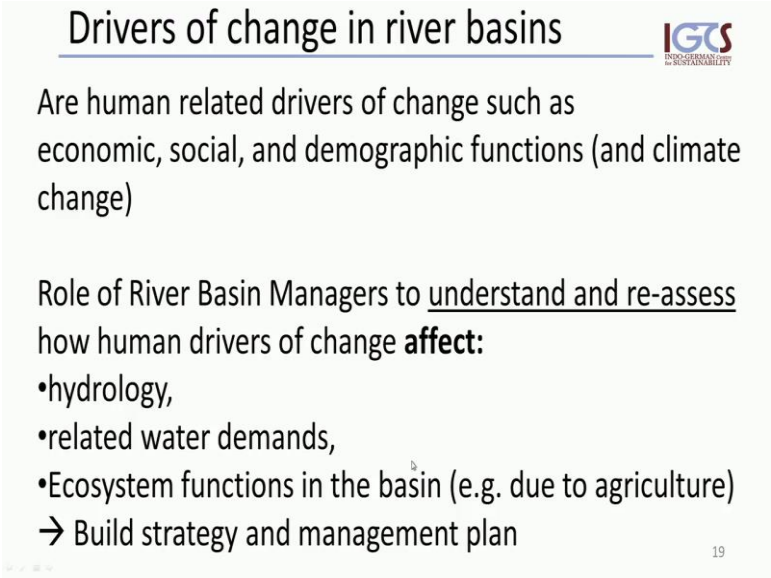

So, what are drivers of change in river basins? Human related drivers of change, such as economic, social and demographic functions, as well as climate change; those are the drivers of change. So, we have all of our dimensions; economic, social and demographic in small also, nature in itself, is a driver of change and then, you have climate change, accelerated through our human interventions; those are our drivers of change. So, the role of our river basin organizations or river basin managers is to understand and reassess how these human drivers of change, affect the hydrology.

How those drivers affect the water demand, and how ecosystem functions in a basin are affected, due to for instance, the agriculture, the agricultural priorities, change of the cropping, the types of crops change or the cropping pattern changes, if new technologies are implemented, irrigation, drip irrigation, flood irrigation; how this has an impact on the ecosystem functions and so on? These all have to be built into a strategy and a management plan. So, it departs from an understanding and reassessment. It has to take place as an ongoing process and be built into a working document that guides and puts and keeps all of the activities on a track and transparent.

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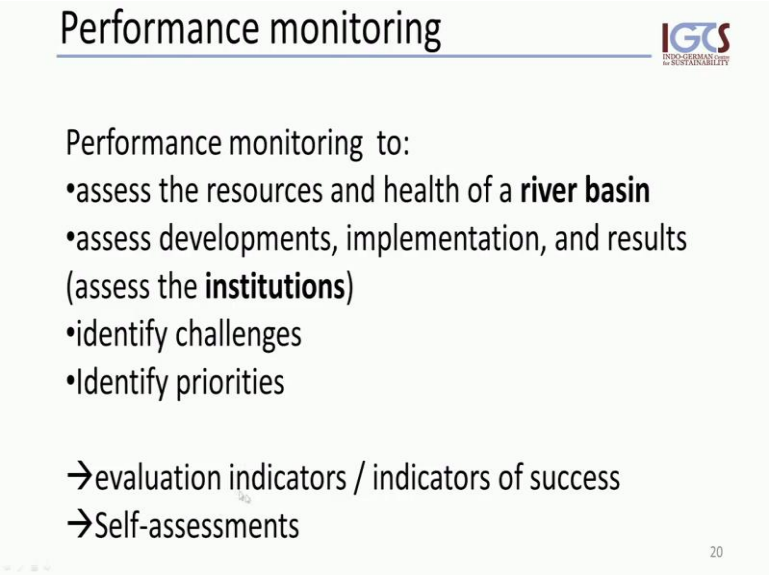

So, the next step to this is performance monitoring. So, that performance monitoring is done to assess the resources and health of a river basin on one side, and on the other side, it is performance monitoring, is conducted to assess developments, implementation and results. It is essentially assessing the performance of institutions. So, one is a part of monitoring that we have discussed earlier; that we monitor our river basin, our hydrology. We monitor our polluters and monitor water quality and water quantities; this is one part of the performance monitoring.

The other has to do with the actual institutions, dealing with all of these aspects or influencing these aspects of the water availability, water quality, water supply, distribution, treatment in our river basin. We also have to identify new challenges, identify priorities and have to use those and build them into so called evaluation indicators, or we can also call them indicators of success. Those are target values, which require knowledge of the system and must reflect what we want to measure here; what the performance is that we want to achieve; performance towards sustainable river basin management. So, we have to define our indicators so that, we exactly achieve an evaluation assessment of those processes, and there must be mechanisms for self assessment, built into the performance monitoring.

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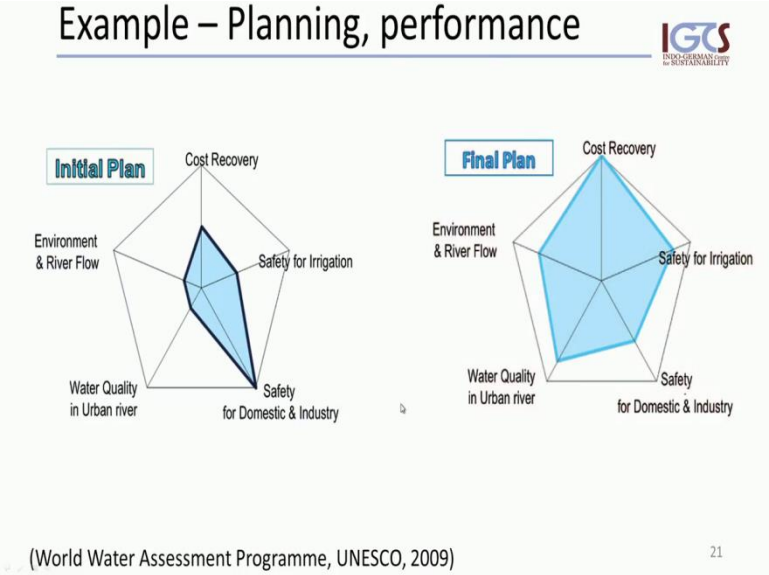

Now, let us look into examples of planning and performance. We have here, the initial situation; what this river basin organization highlighted as their performance indicators versus cost recovery, the safety for irrigation, the safety for domestic and industry, in terms of water, the water quality in urban area and environmental and river flows? What you can see here is that they were performing very well, in terms of safety for domestic industries. They will be performing less well in cost recovery and safety for irrigation and very locally (Refer Time: 13:31), on water quality and environmental river flows.

So, this was at the beginning and when we start implementing this sustainability, those changes towards sustainable river basin management would start from a baseline indicator, set to measure your changes against that baseline. Then we have the result at this point, at a later stage of the implementation of this management plan. We have the same indicators here and what we see is that its overall performance improved substantially, in all of these performances, visible in all of these performance indicators. There was a slight shift from the safety for domestic and industry is where the performance actually reduced.

But at the same time, water quality in the urban rivers improved substantially. Irrigation improved substantially, and a full cost recovery was achieved in this specific case, and major improvements were achieved also, as in regard to the ecosystems services, as regard to environmental and river flows. So, this is a very good way of representing and

transmitting the results, the successes from such interventions, from the implementation of these sustainability measures.

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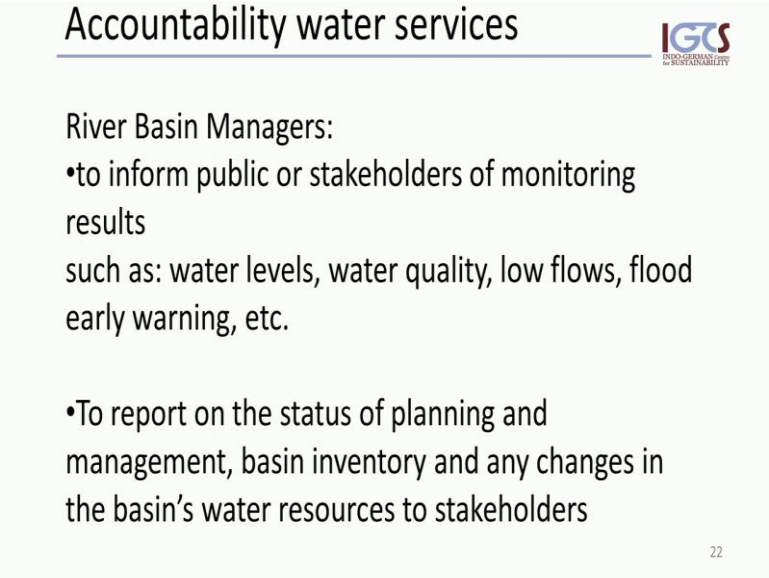

Now, important is accountability of water services. So, the river basin organization or river basin managers should have an application to inform public or stakeholders of the monitoring results of exactly, such performance indicators that would be one message, but not only. There should be information shared on water levels, water quality. Important are low flows especially, for farmers, who use water for irrigation. There should be information shared on flood early warning etc.

So, this is part of the public information or stakeholder information, which should be built into as part of accountability of water services. Also, as part of the accountability, there should be a reporting on the status of planning and management; report on basin inventories, in terms of what is available? What type of infrastructure do we have? What is working? What is not working, in terms of water infrastructure? How does it affect the stakeholders? Any changes in the water resources in the river basin should be reported to the stakeholders and vice versa, stakeholders notice any of these changes and also, they should have a possibility to report and inform the river basin managers.

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So, this is part of accountability of water services. What are the key components of sustainable river basin management now? This in an order; so, starting from one that should be in the first priority of sustainable river basin management. There should be a good knowledge of the natural resources present in the basin. So, the foundation is our hydrological budget, our water budget in the river basin. Then at a second stage or second priority, is political will and commitment to implement sustainable river basin management. The third is that we need a well defined flexible and enforceable legal framework and regulation.

So, we have seen an example from the European union with a very demanding, very ambitious legal framework. Important is that it is well defined, flexible and enforceable, and has to be available for that specific river basin, or has to be developed if it does not exist. In the first place, we have the need for adequate investment. There must be financial stability and sustainable cost recovery are very important. Then we have, need a basin management plan and clear vision at the last stage, which is any implementing instrument or tool, we have usually, envisaged a management plan to be a report, a piece of paper, but it should be considered as a tool that helps us work through the implementation and realization of our vision.

That basin management plan has to have an inbuilt capacity development. It should also include participation and coordination mechanisms, and it should foster information

sharing and exchange. There should also be, attached to that basin management plan, a water allocation plan and a comprehensive monitoring and evaluation plan.

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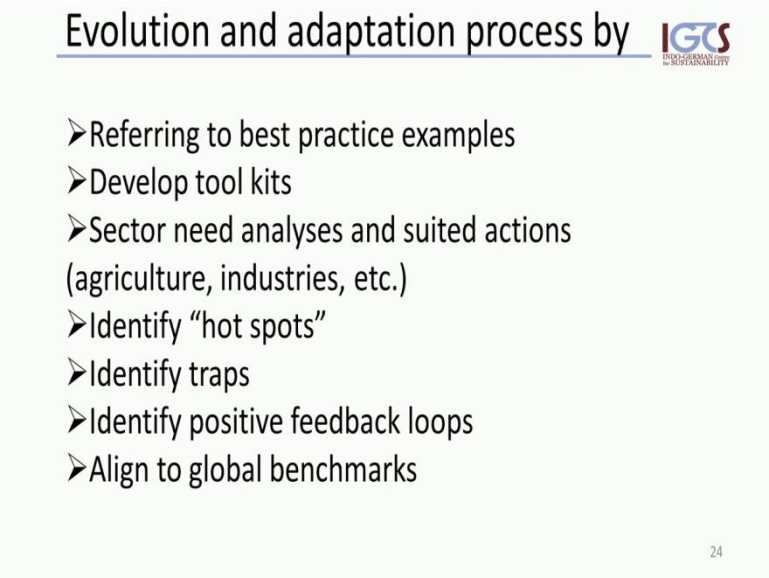

Now, that evolution and adaptation process can be supported, and can be made successful through a number of various; one of them is to refer to best practice examples; to take up what has been achieved in similar river basins and similar climatic regions in different, in similar political frameworks what were successful best practice examples? Also, it could move towards the achieving that switch to sustainable river basin management is to develop tool kits of how to set up a plan; how to make a strategy; how to identify stakeholders; how to build an inventory of the polluters of our river basin and so on.

For that, tool kits are available or can be adopted or developed specifically, for a case. There should be a sector need analysis be done and there should be actions that suit these individual sectors. Agriculture has different requirements than industries and so on. So, those should be analyzed and in some of these, there should be targeted, tailor made actions, towards these individual sectors, although we have to perceive that all of them are using the same river basin and have to be budgeted into the available resources, based on our hydrology and our water budgets.

What also is a good step to do towards a successful sustainable river basin management is to identify hotspots. Hotspots would be areas, geographical areas, where some burning

issues occur, where may be, most of the industries are concentrated or where the major environmental degradation has taken place. The hotspots could also be positive examples, which could be used to trigger and exemplify how actions could be implemented in other parts of the river basins. So, hotspots could be positive or negative in this.

Then we have to work on our river basin as a system. So, we have to identify traps; traps in our institutional framework and in our interventions, where we have to identify a positive feedback loops. They are very important, because being positive, they should be reinforced and priority should be given in terms of resources to enhance and stabilize these positive feedback loops and lastly, it is important to align into our global benchmarks. The meaning is the global benchmarks what the legal frame is of a country, but also the globally, agreed benchmarks such as the coming up sustainable development goals or still, active millennium development goals. So, those are useful benchmarks, which can serve as a more global as to allow global comparison of the implemented efforts at local scale.

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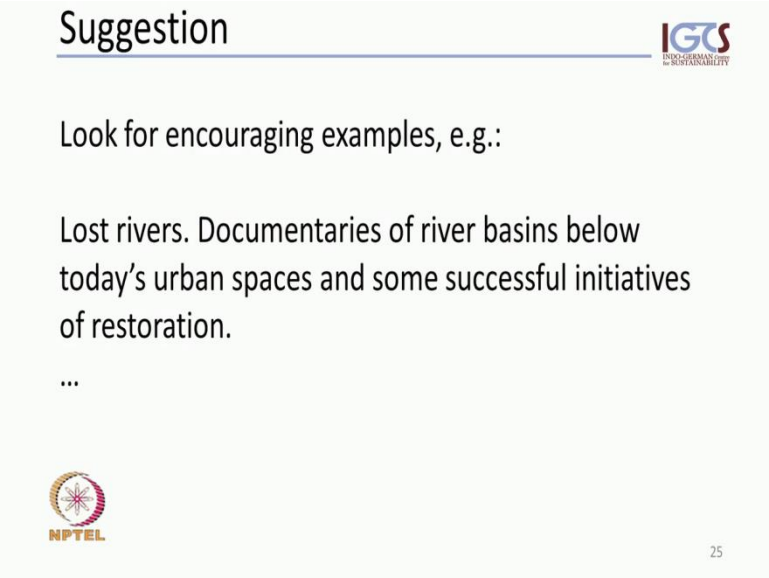

Now, I suggest you to really look for encouraging examples. There are examples of river basins like the GLOWA WALTA basin; the example of the Danube River that I showed you earlier, but you can find many more. I would also suggest you to look, to see the documentary called Lost Rivers, which is about river basins, river catchments, placed

and located below today’s urban spaces and that documentary show specifically, a successful initiative of the river restoration, restoration of natural ecosystems, processes and functions and services in these urban spaces.

So, please look for more examples, which you may take as a starting point to draft a strategy for your own river basin. With this, I am closing the course and thank you for your interest in the course. I hope that I was able to answer many of the questions, which you had when we started and I hope that I was able to keep you interest in the water resources management subject, as a whole and I have introduced new methods, new thoughts, towards sustainable river basin management, wherever you are in your professional field.

Thank you for your attention.