

# Messages from Departments and Centers of NILIM

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## Shed light on the river channel design!

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*(Keyword) Foundation of study of technology policy, Disaster Prevention and Mitigation, Flood control, Rivers technology, Climate Change Adaptation*

1. Six Reasons to consider river channel design is very important

*It is a technology that integrates a plurality of objects.*

For the creation of the river channel, maintenance, conservation of nature, landscape formation, river channel use and easy flood control, completely different nature of several important goals are required for each purpose. Channel design is to aggregate at only one point of how the shape of the river after all. In this point, competence to proceed is asked that things are truly integrated.

*It is a technology that does not escape abstract theory, the theory of general*

River channel design cannot be supported under discussion "debate should be like this" or "indicative of the direction". In the end, we must decide on the form, so there is no room to replace the text representation. Under the pressure that we must decide concrete things, technical merits of the individual to be charged will be apparent. Therefore, the technique and technicians engaged with the technology are well trained.

*Logic is required* and people in charge will *be trained*

It is the technology of building social infrastructure is required logic in deciding. There is more than one purpose, and the theory of integrating and adjusting them is required to determine the shape. So, through the river channel design, logic of technology is exercised. The theory of negative effects of what it is trying to determine the things that have been documented only in 100% logically is the logic that has been trained proceeding to its destination and the turn will be coming for the first time. And to expose the negative effects in the front of the theory and technology, then it is probably more likely to become useless.

*It will be a serious match called into questions of the results*

In consideration of various measures, it should be fairly possible to develop the rivers relatively as soon as possible. Aspect of river disaster recovery is definitely important. If this is performed, then the result will appear in front as usual first appearance of the river, which is asked questions of the judgment of the quality; whether it is good to be true or not. Over the years, a variety of further quality can be seen. After 10 years to develop a river channel, the following things become specifically apparent; to find what organisms, to give effective flood control in response to the flood, and to fall within the expected maintenance effort. If there is a spirit that catches it, river channel design is a unique opportunity for hardball to improve technology.

*To be thought of the basics of the river technology*

The following inquiries of essential matters emerge: if one wants to determine the shape of the river, how the depth of the river? and how determined the width of the river in the first place? : What do you think you have to assume what the sediment supply? : How does it come to its present form? : If we continue in this state, what does the form become? etc.. Directly, it would be a discussion of the basic frame design of river channel. And it will lead to systematization of the river and technology.

*It is a technology that is open and connected to knowledge in various fields*

Even saying to determine the shape of the bite, utilization of knowledge is required in the following various fields; Hydrology and Hydraulic Engineering, Sediment hydraulics, of course, Geological terrain, Geotechnical Engineering, and Biology, and such as those involved in the ecosystem. And it is necessary to understand the relationship between the river and social and local conditions. The large number of elements involved the diversity of those characters is difficult to design river. However, those matters are also a proof of being a technology that has been

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connected to the open state of the river which is also a design community and the development of science and technology. You may also express it as "the junction of rivers technology".

2. Now, four reasons to consider why the river channel design is important

Standing position as a potential last resort of Disaster Prevention and Mitigation

Increase due to the impact of climate change flood flow has been an issue of concern. While a variety of measures to address the larger flood will be examined in one piece of hardware and software, we hit the spotlight inevitably also means that the excavation of the river channel in order to increase the flow-through capability (flood discharge flowing through the river safely). According to a simple calculation, River channel tract area (Cross-sectional area of a river channel) increases by few %, probability of flooding to occur outside the dike is reduced. For river channel excavation, there is the difficulty to a certain degree. However, it is a measure basically carried out only in river. So depending on the degree to which the practice of certainty would increase. In fact, many of the disaster recovery of the river channel excavation are mainly focused. Therefore, without falling into the river easy technique referred to as "you can simply dig" by excavation carried out through the appropriate consideration, we need to keep the pride of a persons involved in the rivers technology.

It is a technology that makes the system, and make a terrain

River channel design can be expressed the technology to create a system that is responsible for the formation or terrain. It is now commonly discussed that it should assume that the external force is increased in disaster prevention and mitigation by occurrence of the phenomenon in the long term, once hundreds of years or more. When we think of the difficulty of ensuring the sustainability of such a time scale in social infrastructure to develop, we remind of the importance of the workings of "creating a terrain that may be present in very long-term" again. Today it is also asked that putting in the river channel design technical content that matches the true meaning of "making the terrain" of things.

Needs to go beyond the "River channel-oriented Status"

Technology system to advance properly to increase

cross-sectional area of a river channel was an important place about the technology involved in the river channel improvement by laying the basis of age enhancement of flow-through capacity. On the other hand, now we also aware that there is a change in the river channel system of the formation and river channel respectively based on the understanding that it is important opinion arose. In other words, the importance of river channel plan was grounded in so-called understanding of the characteristics of the river channel. It was happened in the early Heisei period. In this regard, "Emphasis river channel current state" as a practical measure, in other words, the idea that change unnecessarily low-flow channel that is formed over the years has emerged. And this has become the starting point of river development even in the current study. This is (the author is seen as) a solution is a first-order approximation of river channel development that you understand the characteristics of the river channel. But wouldn't only emphasized "Status" or obsession have to walk alone? Would understanding river channel characteristics and efforts to river channel design that takes into account the understanding not have become blurred? Now I think we have been asked again river channel design which is advanced to status-oriented.

The need for a large scale of time and space to think

Related to the fact above, we are much likely to focus on each single event of interesting and important right in front of you in the excavation of technology and research issues related to the river channel and the setting process. Therefore, wouldn't the tendency to perceive how a dwarf compared to the scale of time and space to think little about the technology that meets the river channel have come out? With the above thing, bearing in mind the large changes in the entire river channel, and considering the nature of the river channel is neglected, are we likely to prone to fall into the pattern from the next to the next to consider the local symptomatic treatment? Or, research interdisciplinary is seemingly progressing, however, because of the above reason, it does not lead to the theory of technology to think the way the entire river channel, putting into a new field which is vertically integrated namely comprehensive and integrative. Consequently, would it become the ironic situation? If more concern has become a reality in any way, I think it is highly significant that the work from the front to the river channel design technology as a

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key to break it down.

### 3. The importance of making foundation for study of high-quality technology policy

Everyone says that leading to practical measures to integrate a variety of research and field information is required. If so, I want to emphasize that it is important to try and establish a concrete way one by one in order to decide how it should proceed. Comprehensive approach is an approach to achieve things, therefore, I would also confirm that it does not itself become a target. We should not be misled by the catchphrase that looks attractive. And we create a foundation and work together as forming the axial and specific technical issues and the goal which are surely important. You may think challenges for "channel design" sounds a bit old school. However from this point of view, don't you think it is not very important and modern field? I intend to take better care of high quality foundation of study of technology policy. Channel design is a representative, which is only one of them.