



Multilevel integrated flood management approach

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The optimal solution for complex flood management is integrated approach. Word »integration« used very often when we try to put something together, but should distinguish full multiple integrated approach of integration by parts when we put together and analyse only two variables. In doing so, we lost complexity of the phenomenon. Otherwise if we try to put together all variables we should take so much effort and time and we never finish the job properly. Solution is in multiple integration captures the essential factors, which are different on a case-by-case (Brilly, 2000).

Physical planning is one of most important activity in which flood management should be integrated. The physical planning is crucial for vulnerability and its future development and on other hand our structural measures must be incorporate in space and will very often dominated in. The best solution is if space development derived on same time with development of structural measures. There are good examples with such approach (Vienna, Belgrade, Zagreb, and Ljubljana). Problems stared when we try incorporating flood management in already urbanised area or we would like to decrease risk to some lower level. Looking to practice we learn that middle Ages practices were much better than to day. There is also »disaster by design« when hazard increased as consequence of upstream development or in stream construction or remediation. In such situation we have risk on areas well protected in the past.

Good preparation is essential for integration otherwise we just lost time what is essential for decision making and development. We should develop clear picture about physical characteristics of phenomena and possible solutions. We should develop not only the flood maps; we should know how fast phenomena could develop, in hour, day or more. Do we need to analyse ground water – surface water relations, we would like to protected area that was later flooded by ground water. Do we need to take care about sediment transport, phenomenon close related to floods – could the river bad bottom increase or decrease for some meters or river completely rearrange morphology – how then inundated area will look like. Hazard of floods should be presented properly, with maps, uncertainty and trends related to natural and anthropogenic impacts. We should look time back, how our river look in past centuries and what are water management plans for future. Which activities are on the river? There are good practice in flood protection, hydropower development and physical planning (Vienna, Sava River).