Are flood protection infrastructures designed according to risk management criteria?

NH9.5 Natural hazard impacts on technological systems and infrastructures

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Motivation

- Flood natural disaster
  - The most frequent
  - One of the most destructive – human life and business

- In Italy Ratio between money spent for prevention and recovery = 1:6

- The necessity of a deep analysis on the economic and technical criteria used to design infrastructures for flood risk protection
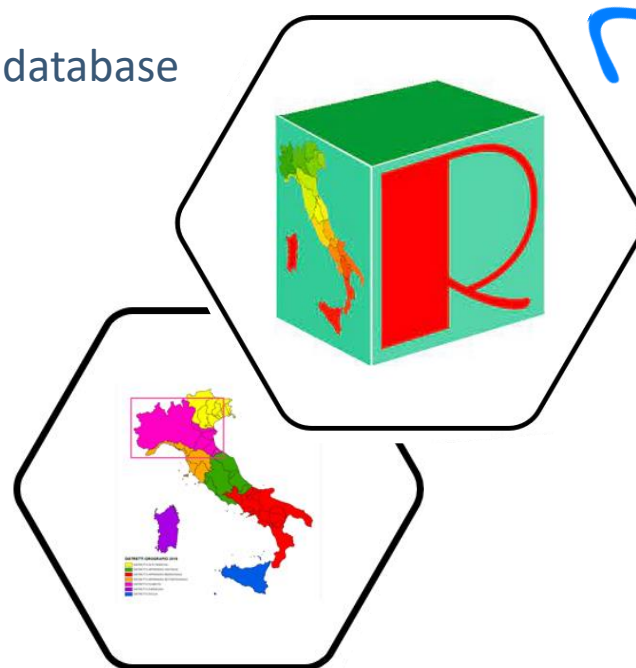
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Data and procedure

❑The ReNDiS database

   ❑ Integration of the already existing database

❑ Flood Risk Maps produced in 2017 and in 2021 *(AdbPo)*

Overlapping of mitigation measures built and risk maps

geographic distribution of physical interventions and their funding with respect to risk level area

	EMILIA ROMAGNA		PIEMONTE		LOMBARDIA	
R1	€ 341.706.845,33	79%	€ 60.978.682,37	54%	€ 175.072.426,91	45%
R2	€ 47.300.120,11	11%	€ 20.758.976,94	18%	€ 137.968.836,51	36%
R3	€ 31.826.827,65	7%	€ 9.097.208,94	8%	€ 59.206.585,18	15%
R4	€ 10.460.174,63	2%	€ 22.058.006,79	20%	€ 12.952.786,59	3%
total	€ 431.293.967,72		€ 112.892.875,04		€ 385.200.635,19	

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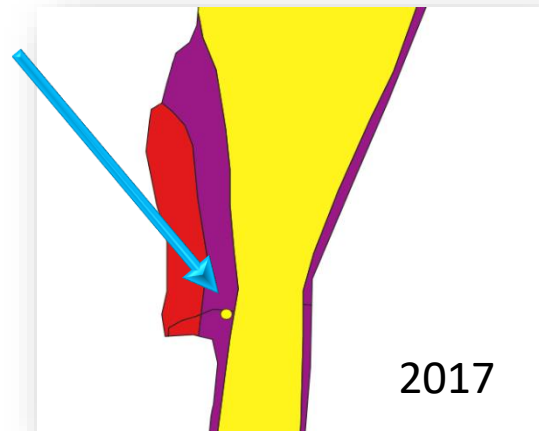
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Methodology _1

Comparison between:
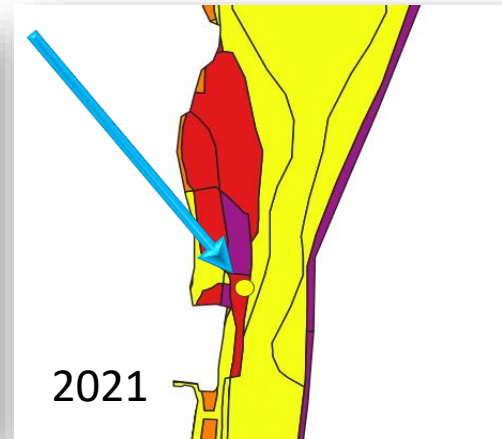
| 2017 FLOOD RISK MAPS | ⟷ | 2021 FLOOD RISK MAPS |

150 structural interventions

Only 5 of the 150 have made a reduction in the risk level !!

Just in 5 cases!

2017

2021

2017
Improvements in the bank defences and hydraulic works on the T. Nure in the municipality of Bettola, Italy

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Methodology$_2$

What about all the remain cases?!

How to explain this:

1) The risk has not been reduced after the built of the infrastructures

   → The infrastructure didn't bring benefits!

2) Risk maps don't catch the effect of the infrastructures

   → Despite a real benefit, legal (and design) regulations are the same

New criteria with which maps are produced!

What's going on?

❑How to determine the effect of the infrastructure in terms of area of influence?

❑ How to determine benefit index?

   ❑ Difference in risk class, reduction in the extension of risk area level....?

Thank you for your attention!

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