



**17 MILLIONS**  
**PEOPLE LIVE IN FLOOD-**  
**ZONE AREAS IN FRANCE\*.**

17 million people are exposed to flooding from overflowing rivers and 1.4 million to the risk of marine submersion.

\* Source: DGPR / Ministry of Ecological Transition (2020).

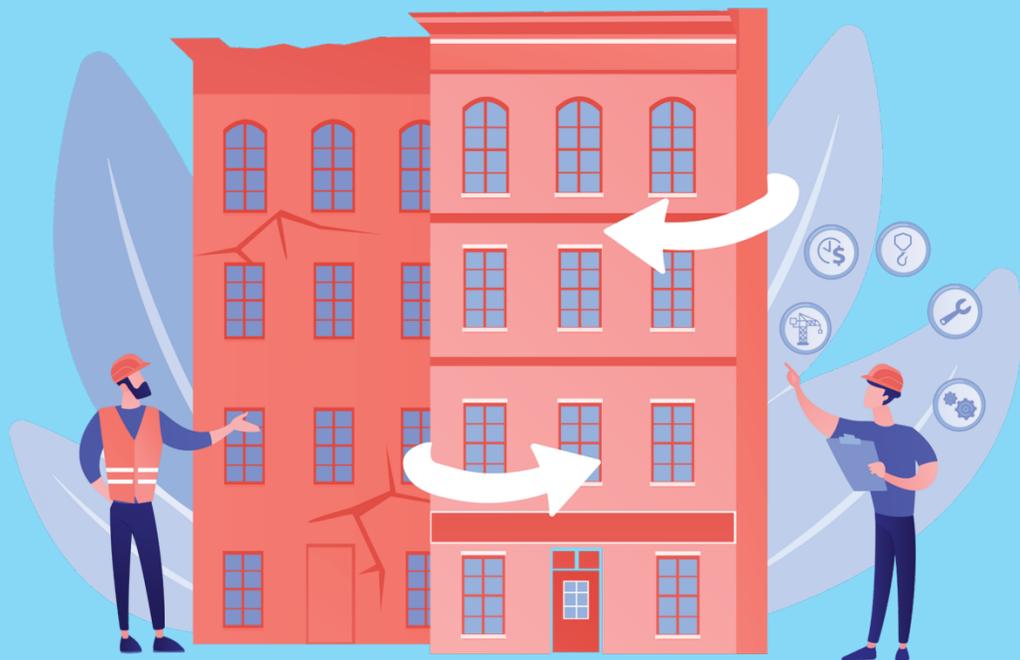


## CONTEXT

According to the IPCC, climate change will lead to an increase in the frequency and intensity of extreme natural events (floods, forest fires...).

Territories will be exposed to ever-greater risks, against a backdrop of population and housing growth.

## HOW TO BUILD RESILIENT URBAN DEVELOPMENT?



## REGULATION

One possibility is to regulate construction in high-risk areas.

➔ To limit damage to buildings caused by natural disasters.

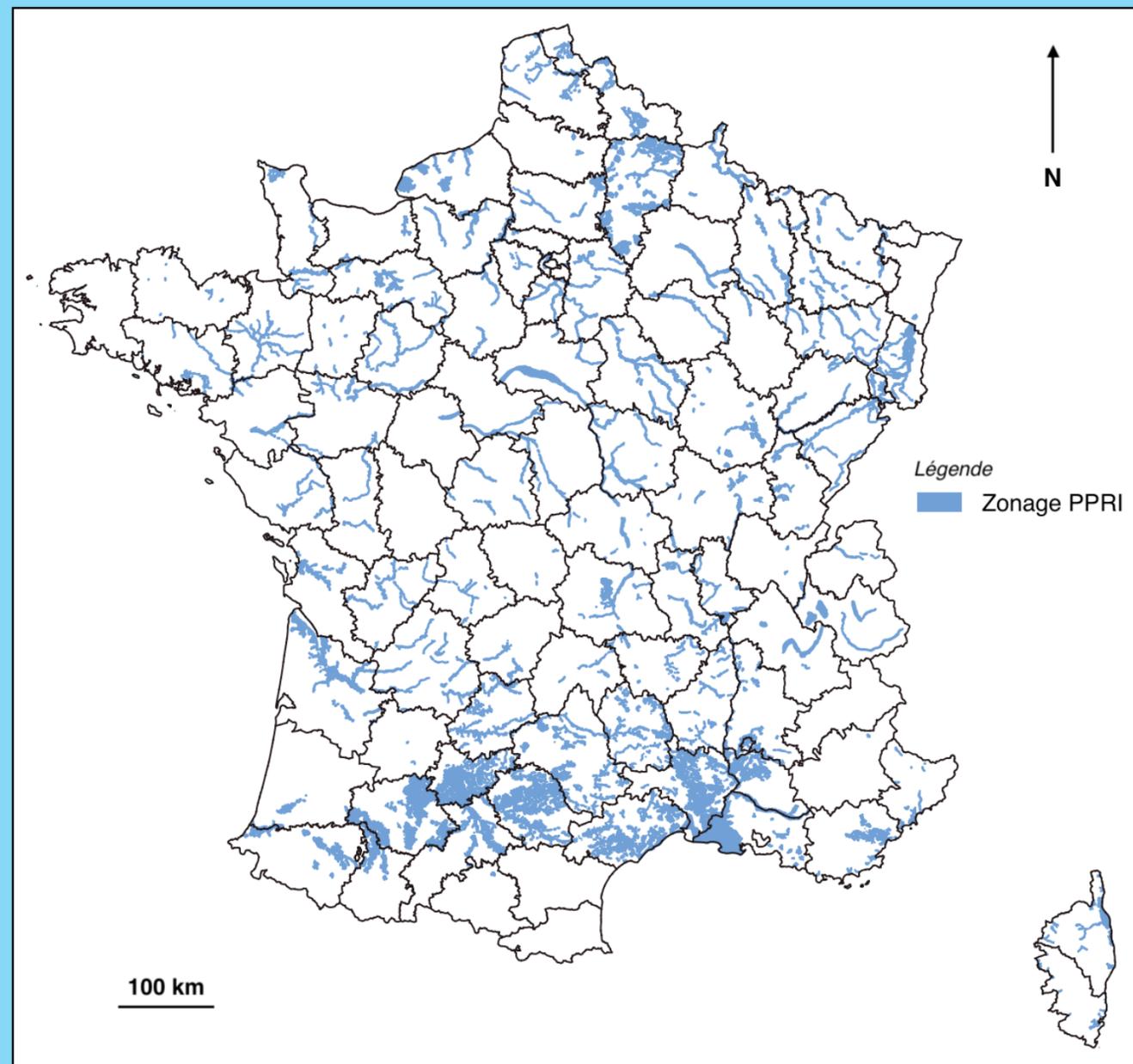
In France, this policy takes the form of urban planning regulations: **Natural Risk Prevention Plans (PPRN)**.

- These plans have been gradually implemented since 1995.
- **By 2021, 57% of municipalities at risk of flooding were covered by a plan.**



## FOCUS ON FLOOD RISKS

### Spatial distribution of the Flood Risk Prevention Plans (PPRIs)



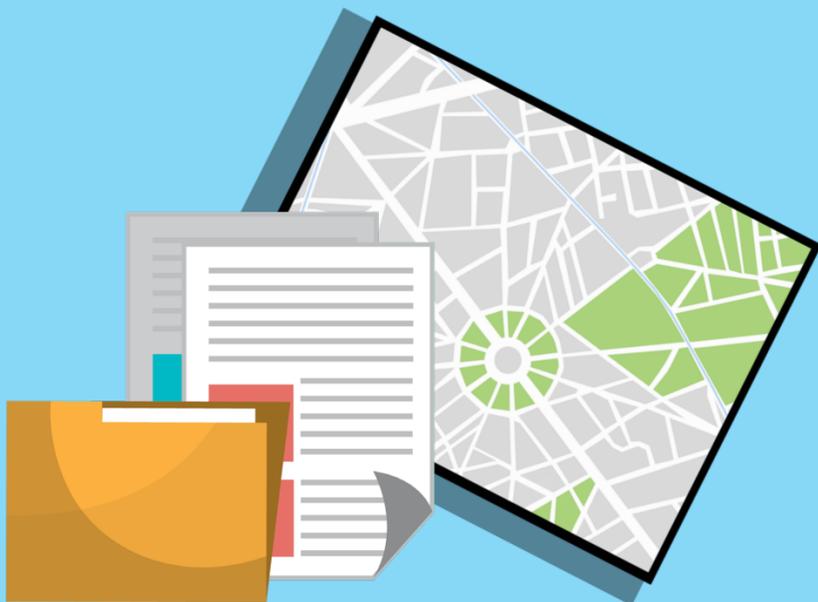
- All PPRIs in force in 2021 that have not been revised
- Coverage: Mainland France (except *Pyrénées Orientales*)
- Source: Julia Paul-Venturine. *Build at your own risk. Integrating disaster hazards into land use regulations*, 2023.

# STUDY

- **Administrations have made new geolocalized data available.**



- ➔ **This makes it possible to find out which regulations apply to each plot of land.**
- **Sample selected: all PPRI's that have never been modified since their inception.**
  - ➔ **We can therefore study the evolution of land markets before and after the introduction of new plans.**



# MECHANISMS

- **People are often unaware** of the risks to which their homes are exposed.
- **When they are set up, PPRs reveal this information to residents.**
  - ➔ **This can reduce the valuation of, and demand, for exposed goods.**
  - ➔ **The new standards increase construction costs for new buildings.**
- **What is the effect of all these mechanisms?**
- **Can the adoption of a plan limit the exposure of homes in risky areas?**



# CONCLUSIONS

- **On average, the adoption of plans has no significant impact on new construction or land use at national level.**
- **Urban development in flood zones continues at the same pace as before a plan was adopted - but with new and safer buildings.**
- **But these results can mask considerable heterogeneity between territories...**



## DYNAMIC

- **Most areas were undeveloped prior to the introduction of a plan, and remain so after its introduction.**
- **In areas where demand for housing is very high (urban centers, coastal areas), it far exceeds supply.**
  - ➔ **This leads people to ignore the risks to which their homes are exposed.**

**From Julia Paul-Venturine,  
*Build at your own risk. Integrating disaster  
hazards into land use regulations, 2023.***

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