

Ebro Resilience Strategy: Flood risk management through green infrastructures and adaptation measures

LIFE EBRO RESILIENCE P1 (LIFE20 ENV/ES/000327)



FLOODS

- Floods are a recurrent natural event
 - Fast and torrential floods.
 - Slow or laminar floods.



ECONOMIC DAMAGE



- Floods generate significant economic damage in the study section:

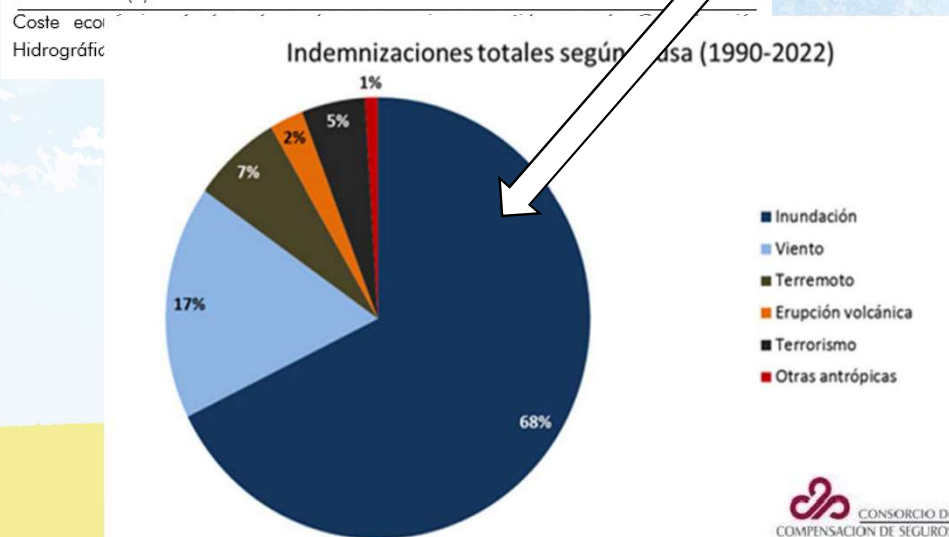
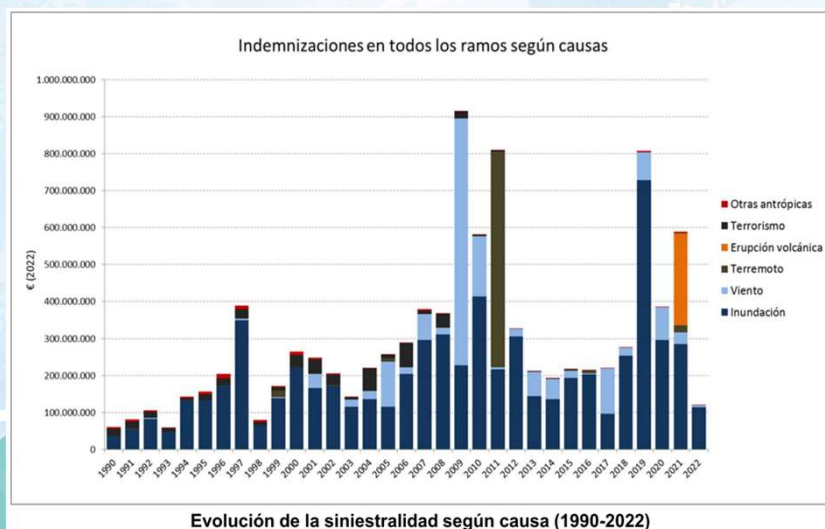
Indemnizaciones en el año 2018	ARAGÓN	NAVARRA
La Rioja		
Navarra		
Aragón		
Agrarios (Fuente: Agroseguro).		

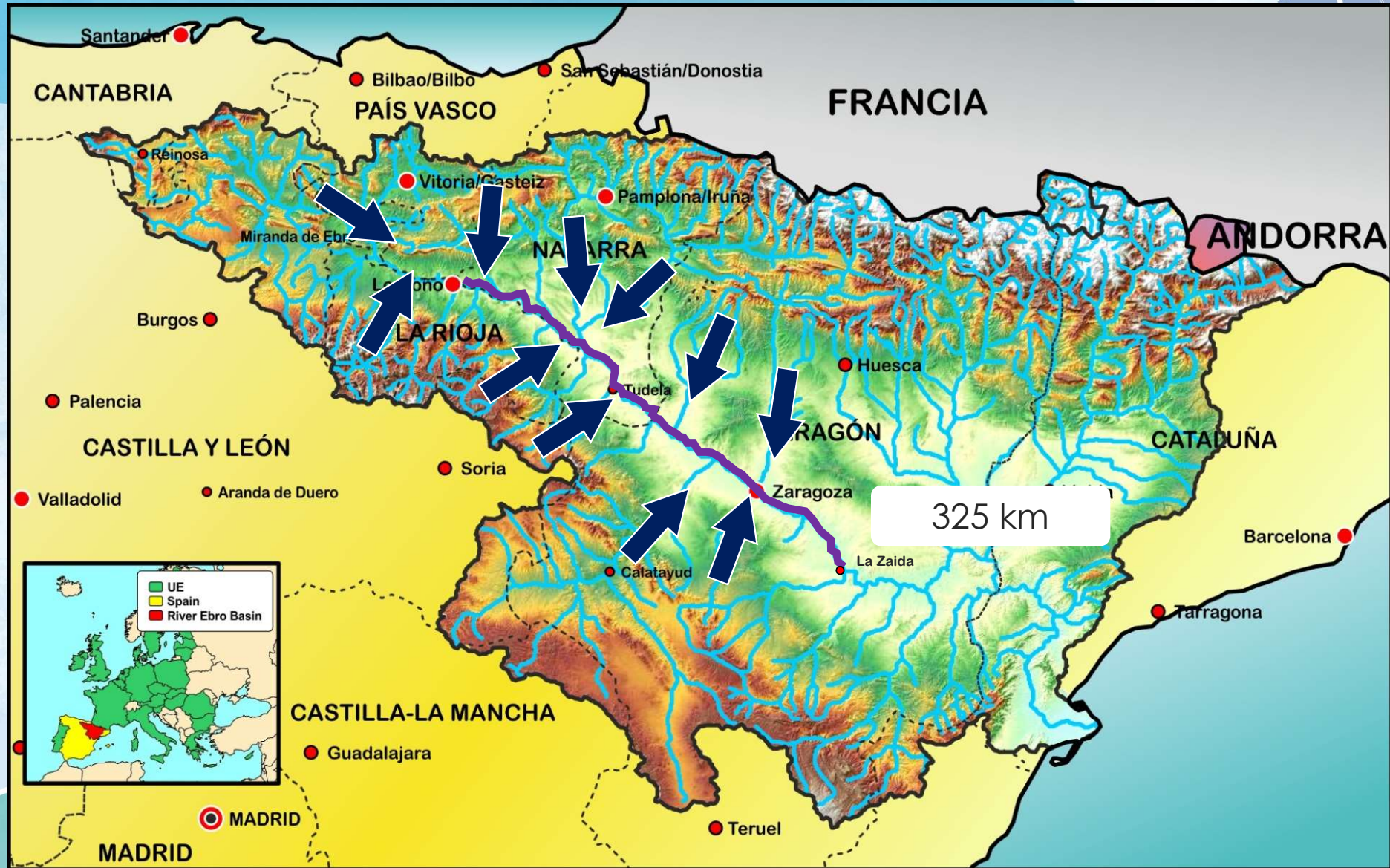
≈ 100 M€ every Tr₁₀

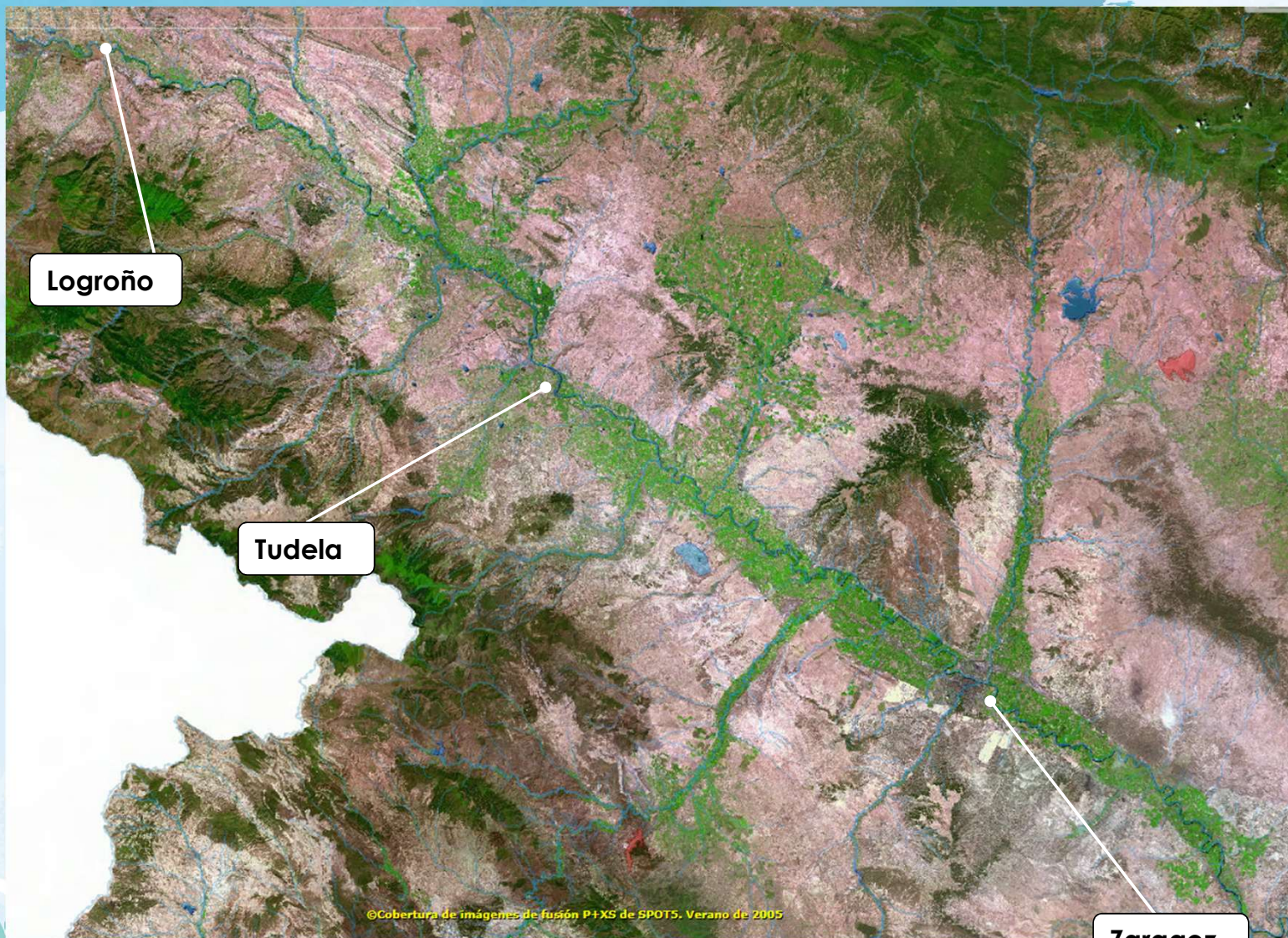
TOTALES (€)	28.521.153 €	10.289.324 €	3.425.200 €	627.667 €	4
Coste económico asumido o previsto por las Comunidades Autónomas tras las averías (Fuente: Gobierno de La Rioja, Gobierno de Navarra y Gobierno de Aragón).					

AÑO	LA RIOJA	NAVARRA	ZARAGOZA	TOTAL (€)
2004	640.000	1.267.000	10.076.000	11.983.000
			1.900.000	4.050.000
			950.000	950.000
			2.260.000	3.710.000
			4.759	15.599.298
2016	308.816	105.000	644.794	
2018	1.929.538	3.663.327	15.101.923	
TOTALES (€)	6.381.336	11.940.086	46.532.015	64.853.437

% Insurance payments:
flood's damages in Spain



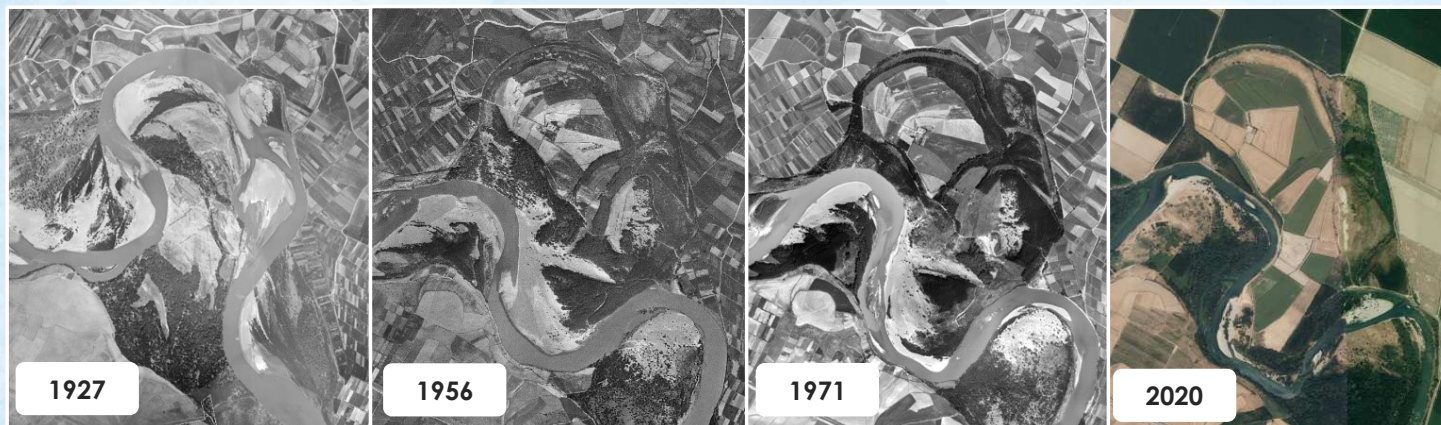




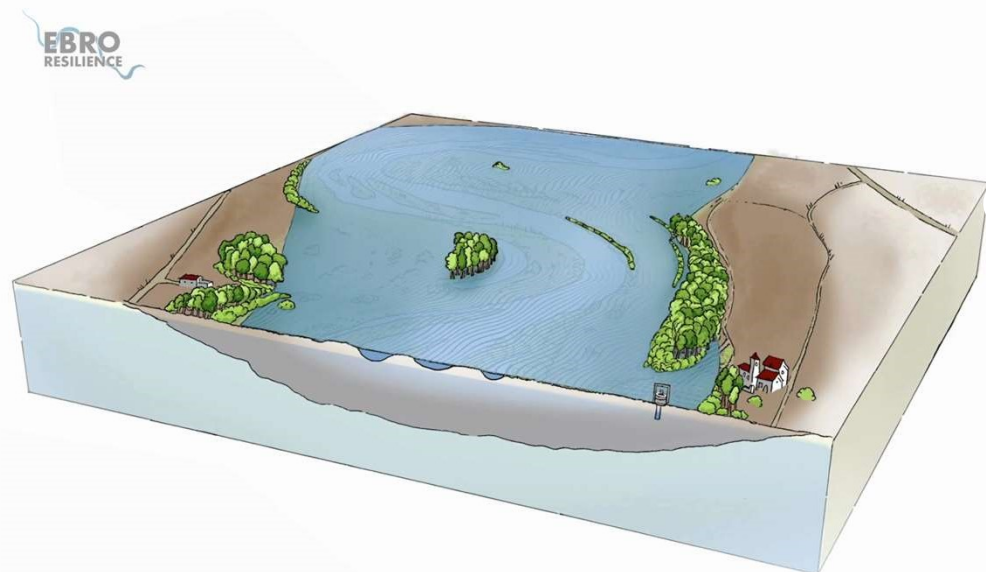
Zaragoz

a

WHY IS THIS HAPPENING?



River basin regulation
Loss of river space
-50% in 100 years

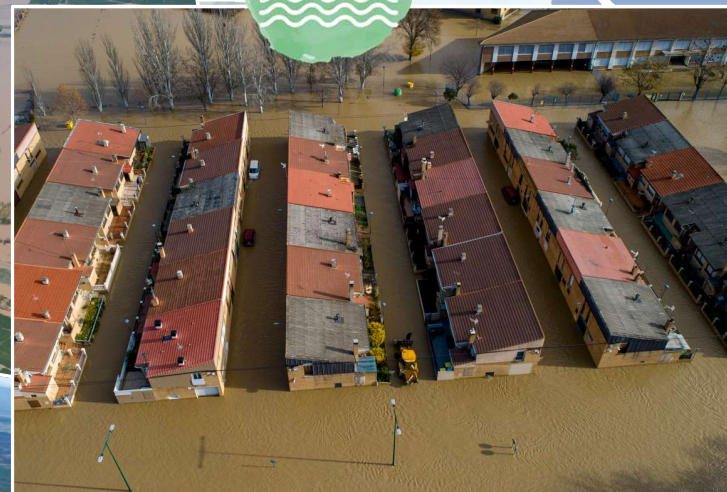


555 km of dykes on 325 km of riverbed

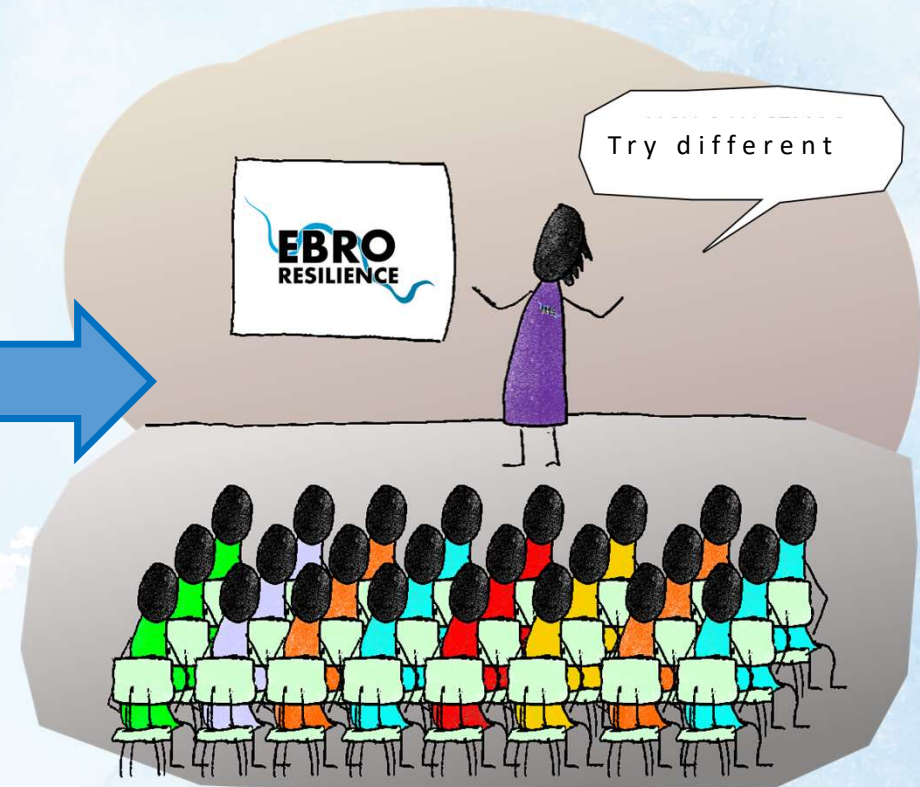
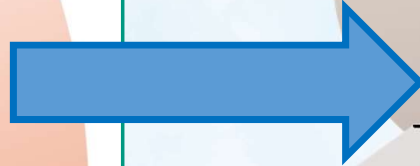
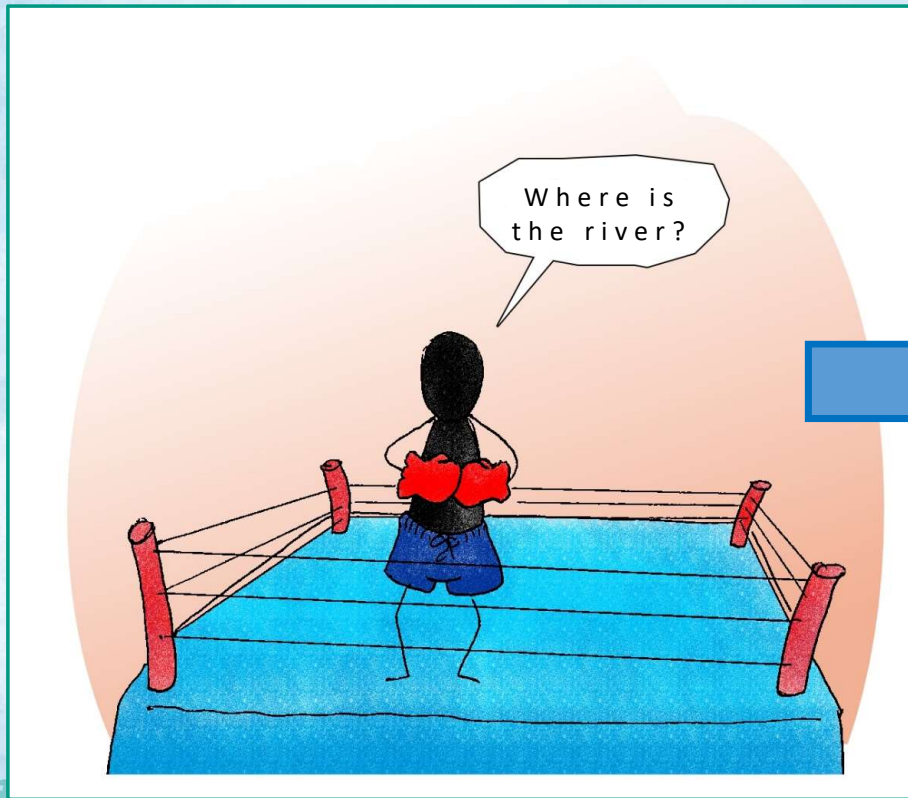
Occupation of space with **vulnerable** areas



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CHANGE THE MODEL



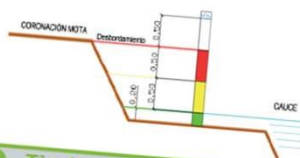
Tipología T4: Perímetros de seguridad ante desbordamientos

12 NÚCLEOS URBANOS

- Novillas
- Pradilla de Ebro
- Sobradriel
- Boquiñeni
- Alcalá de Ebro
- Cabañas de Ebro
- Alfocsa(Z)
- Pina de Ebro
- Torres de Berrellén
- Remolinos
- Monzalbarba (Z)
- Quinto

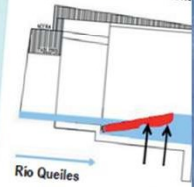


Esquema del perímetro de seguridad en Boquiñeni (Z)



Esquema funcionamiento

Río Queiles en caudales bajos
Río Ebro en caudales ascendentes



Instalación de compuertas flotantes río Queiles

Tipología T5: Áreas de inundabilidad temporal

11 ÁREAS CON > 11 hm³ de almacenamiento

- Novillas
- Pradilla
- Pina de Ebro (2)



Área de inundabilidad controlada de Novillas (Z)



- Alagón
- Boquiñeni
- Remolinos
- Torres de Berrellén
- Sobradriel
- Utebo
- Alfocsa

Área de inundabilidad libre Mejana de la Cruz en Alagón

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Estrategia general de actuaciones

Tipología T2: Mejora de la capacidad de desagüe del cauce

1. Tratamientos sobre la vegetación y retirada de elementos obstructivos > 120 km de cauce

2. Rebaje/retranqueo/supresión de motas

ACTUACIONES EN > 24.500 metros
Retranqueo > 18.318 metros
Rebaje > 2.200 metros
Supresión > 4.280 metros



Retranqueo mota Alfaro (LR) 710 m



Novillas (Zaragoza)

Retirada mota Cabañas de Ebro (Z)

T2-3. Permeabilización de grandes masas de sedimentos vegetadas (CURAGES).

67 ACTUACIONES EJECUTADAS

> 48 ha en Red Natura
> 128 ha fuera de Red Natura



Curage en Utebo (Zaragoza)

- Boquiñeni (1)
- Alcalá de Ebro (3)
- Remolinos (1)
- Alagón (3)
- Gallur (2)
- Torres de Berrellén (3)
- Utebo (2)
- Monzalbarba (1)
- Alfocsa (2)
- Zaragoza (2)
- Villafraña de Ebro (3)
- Fuentes de Ebro (1)
- Pina de Ebro (1)
- Quinto (3)
- Zuera (1)
- Villanueva de Gállego (1)

T3-2. Construcción de cauces de alivio

6 CAUCES DE ALIVIO

- Alfaro
- Novillas
- Alcalá de Ebro
- Cabañas de Ebro
- Pina de Ebro
- Tauste



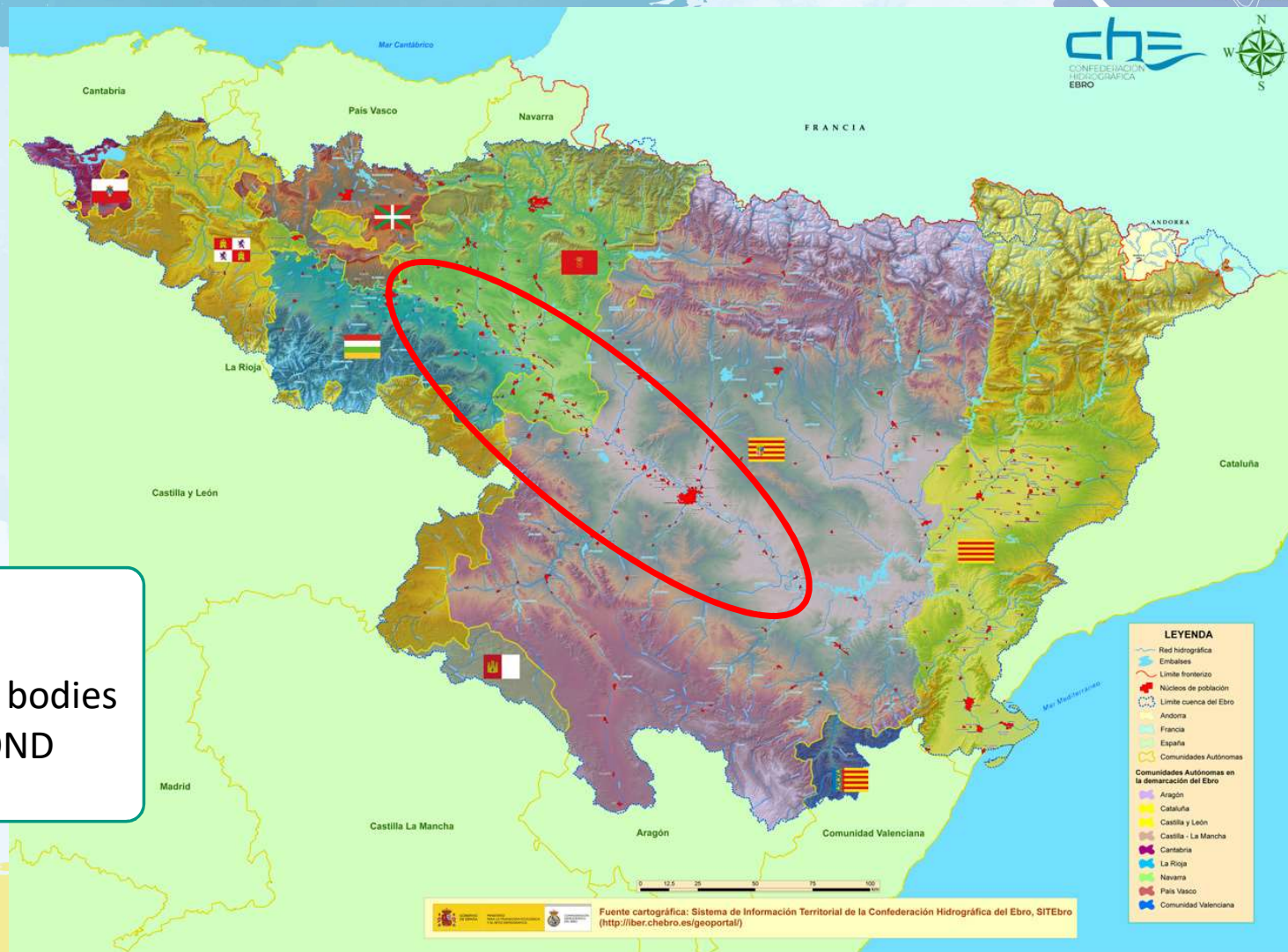
Cauce de alivio Alcalá de Ebro (Zaragoza). Cauce de alivio La Roza, Alfaro (La Rioja)

2018

Versión 1.0 Enero 2020

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- REDUCE the impact
- IMPROVING the state of water bodies
- Improve the capacity to RESPOND



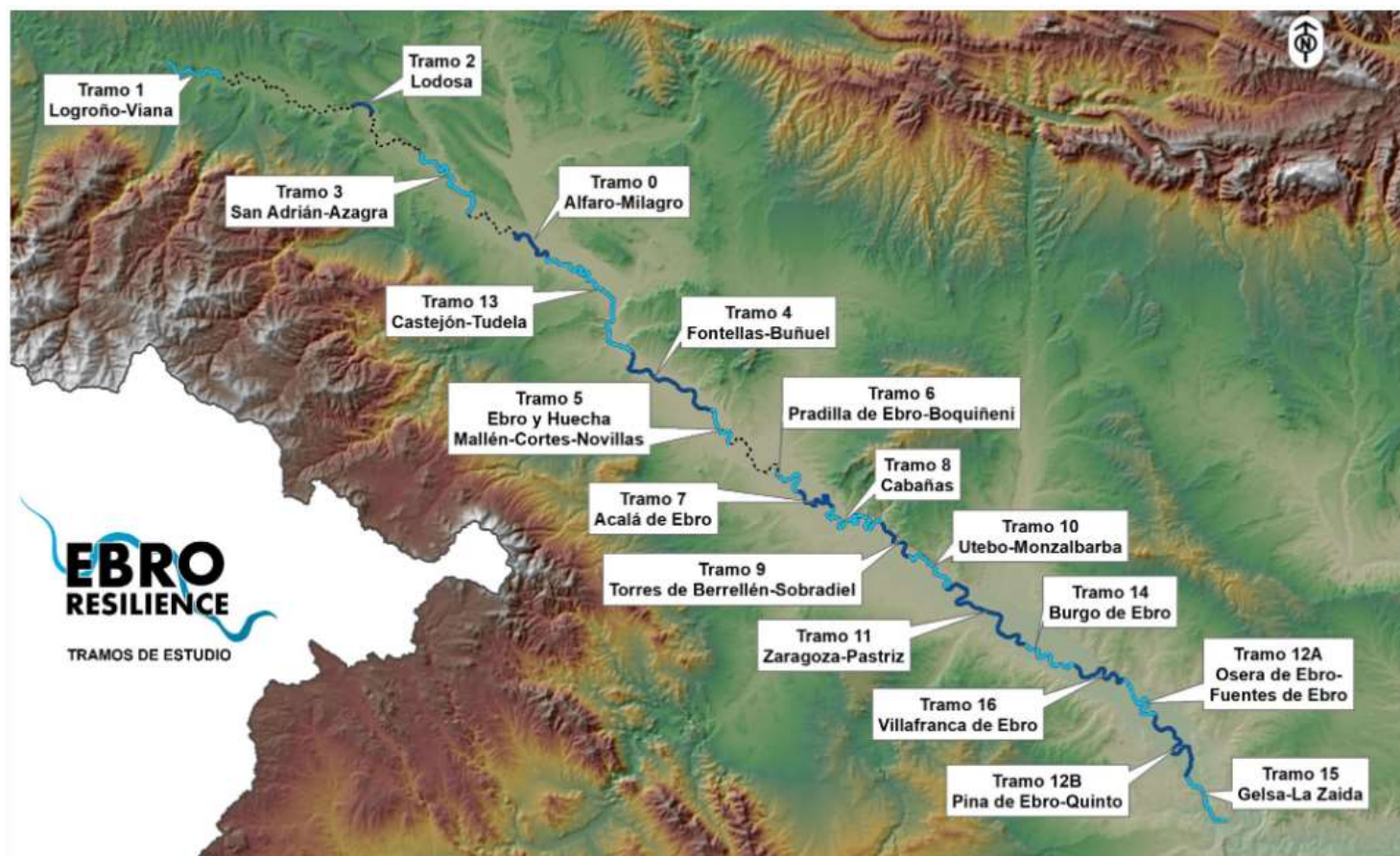
public participation

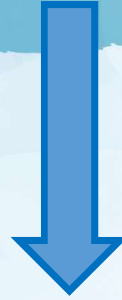
Water framework
Directive 2000

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Assessment and
management of
flood risks Directive
2007

Administrations coordination

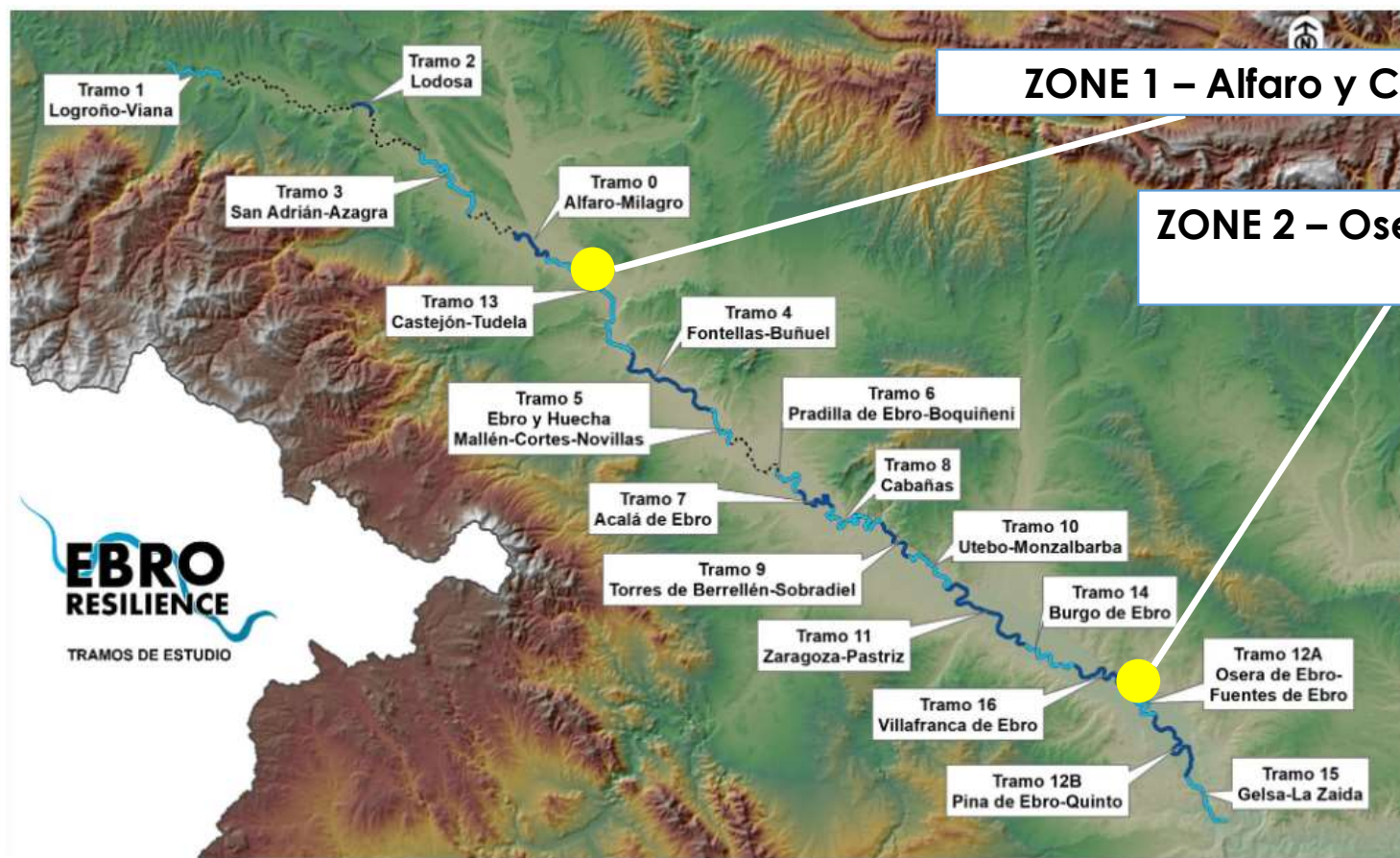




Sept 2021- Aug 2027

Budget: 13,3 M € (EU contribution: 7,3 M €)

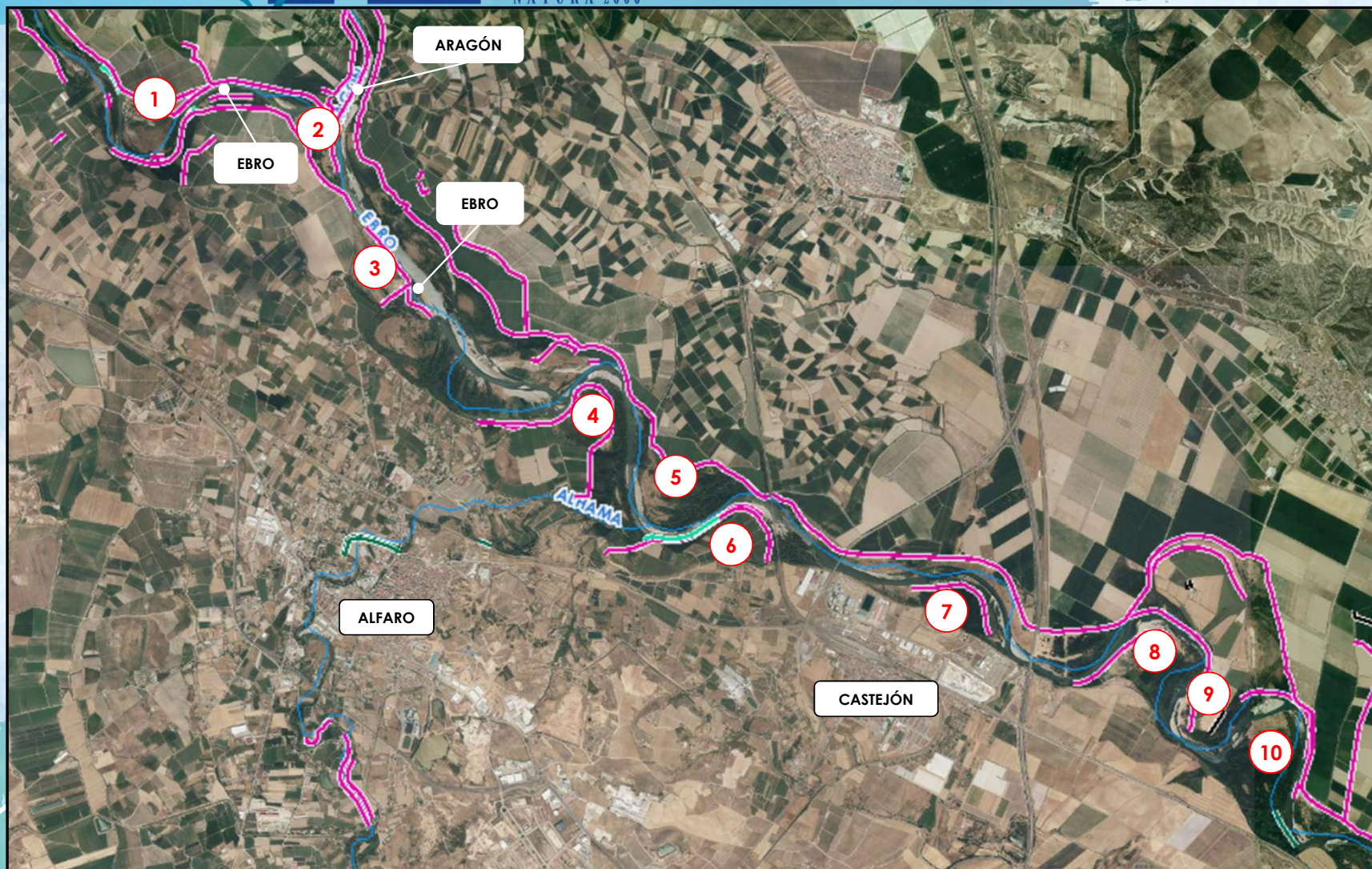
National authority plus 3 regional governments



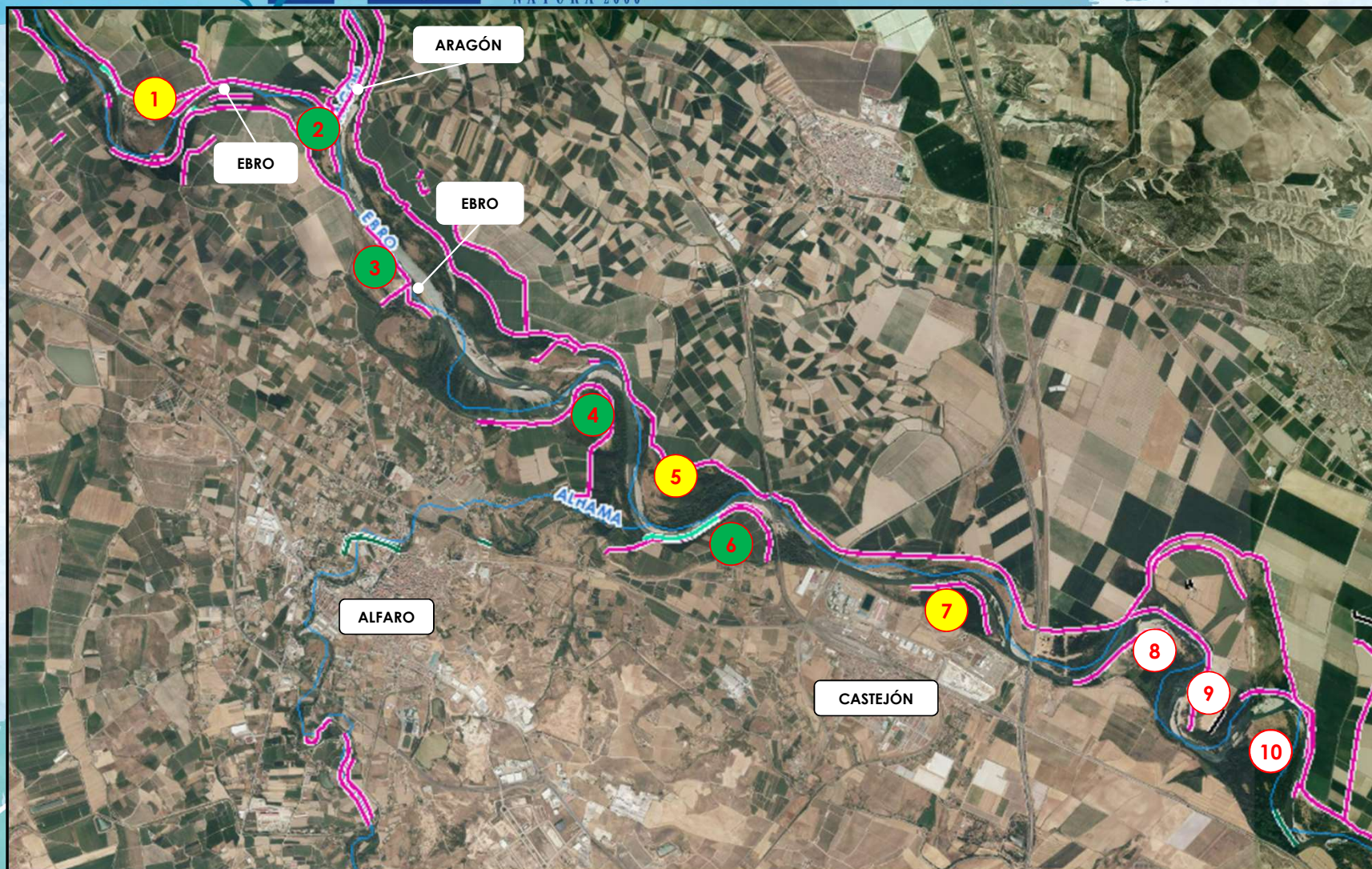
ZONE 1: NWRM



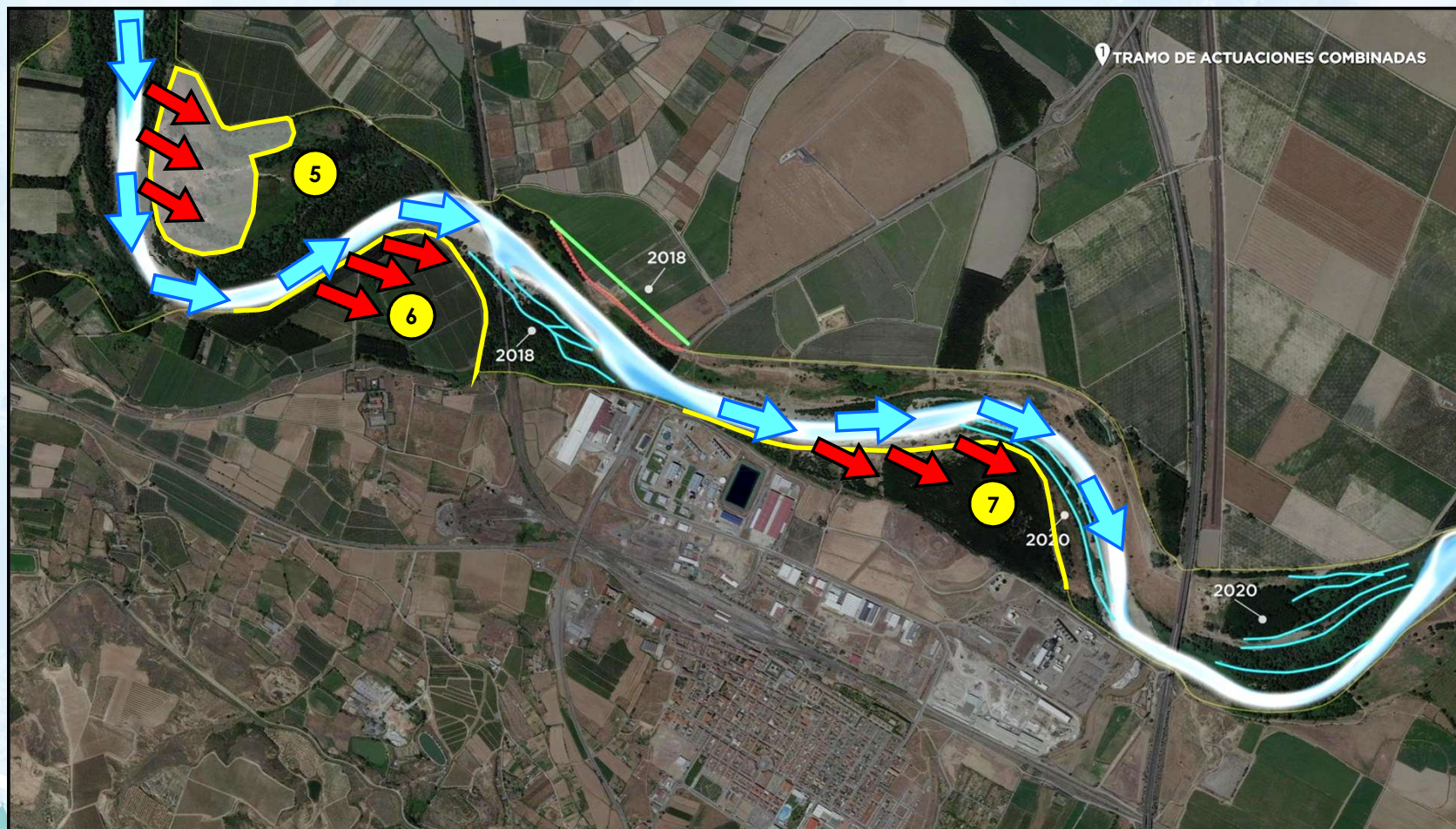
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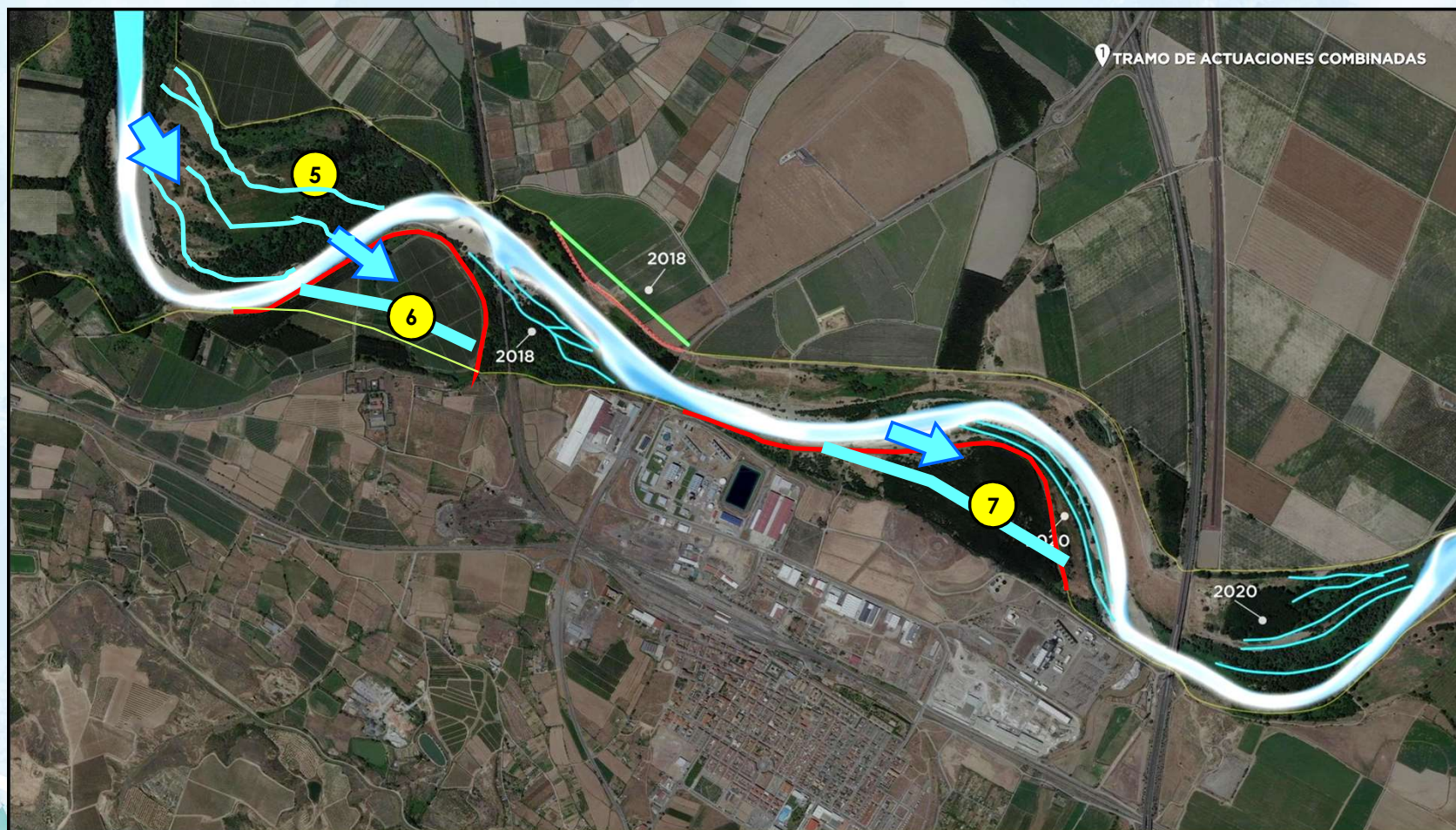
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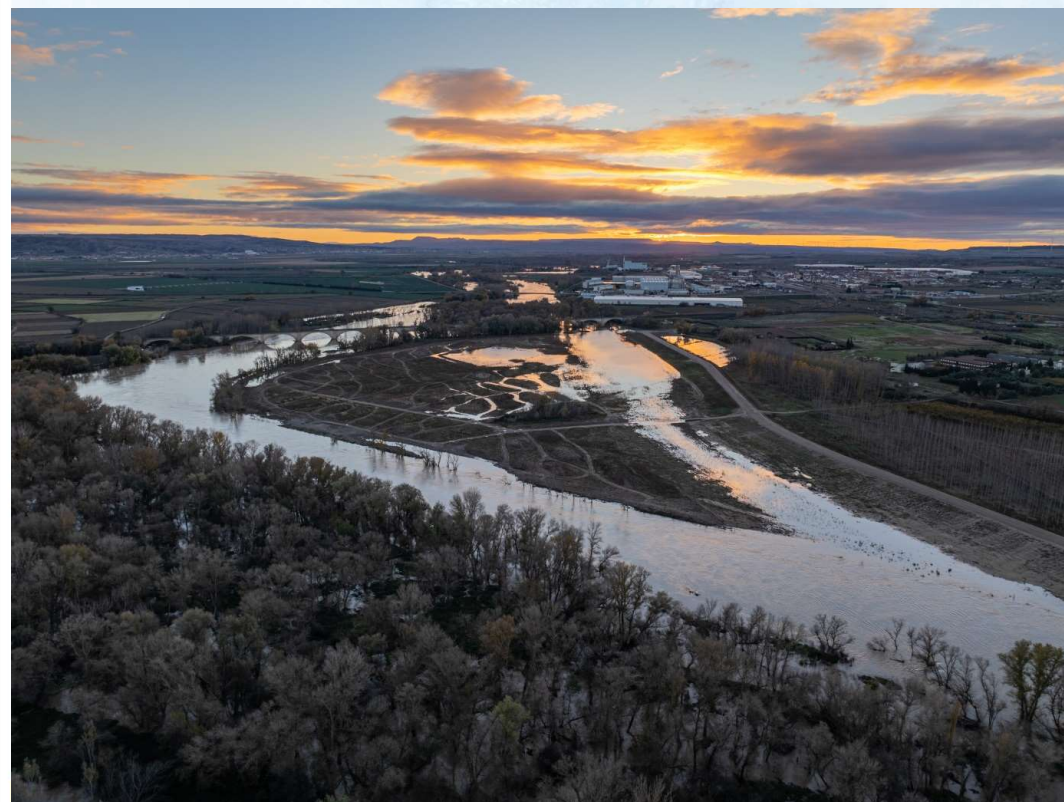
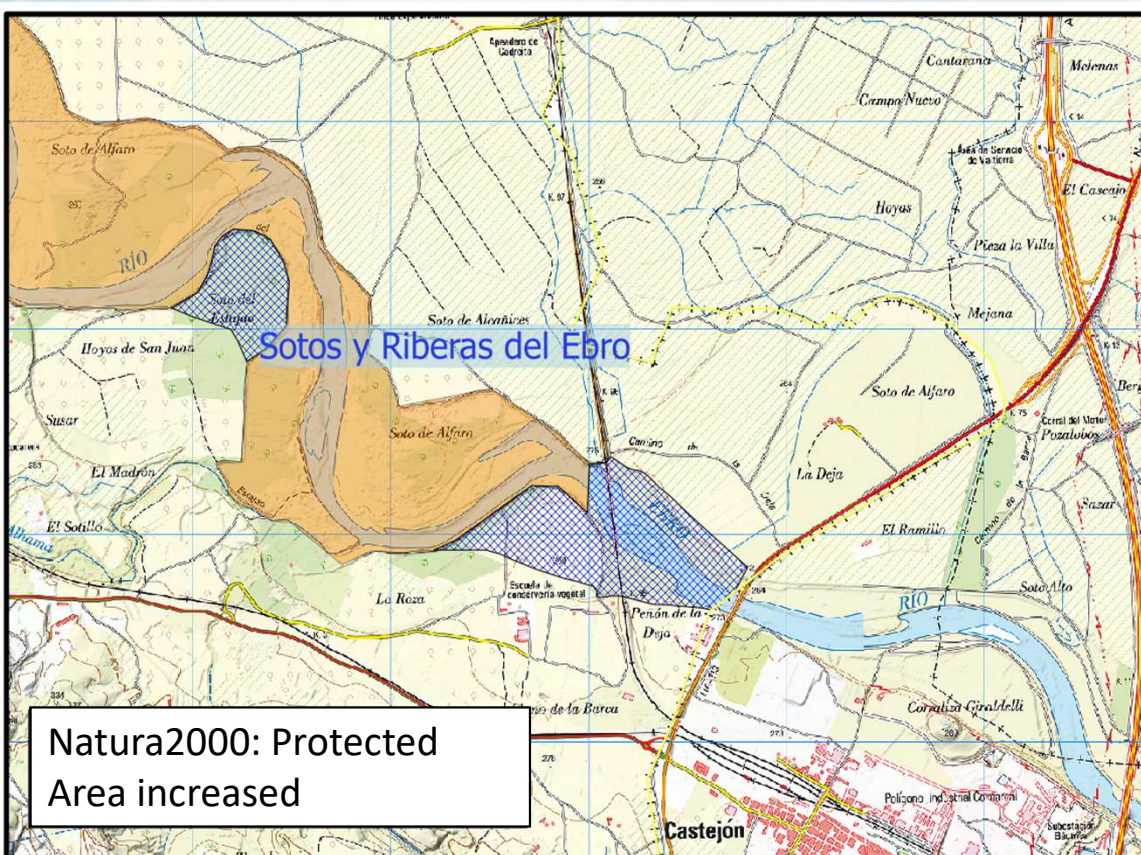


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ZONE 1: NWRM

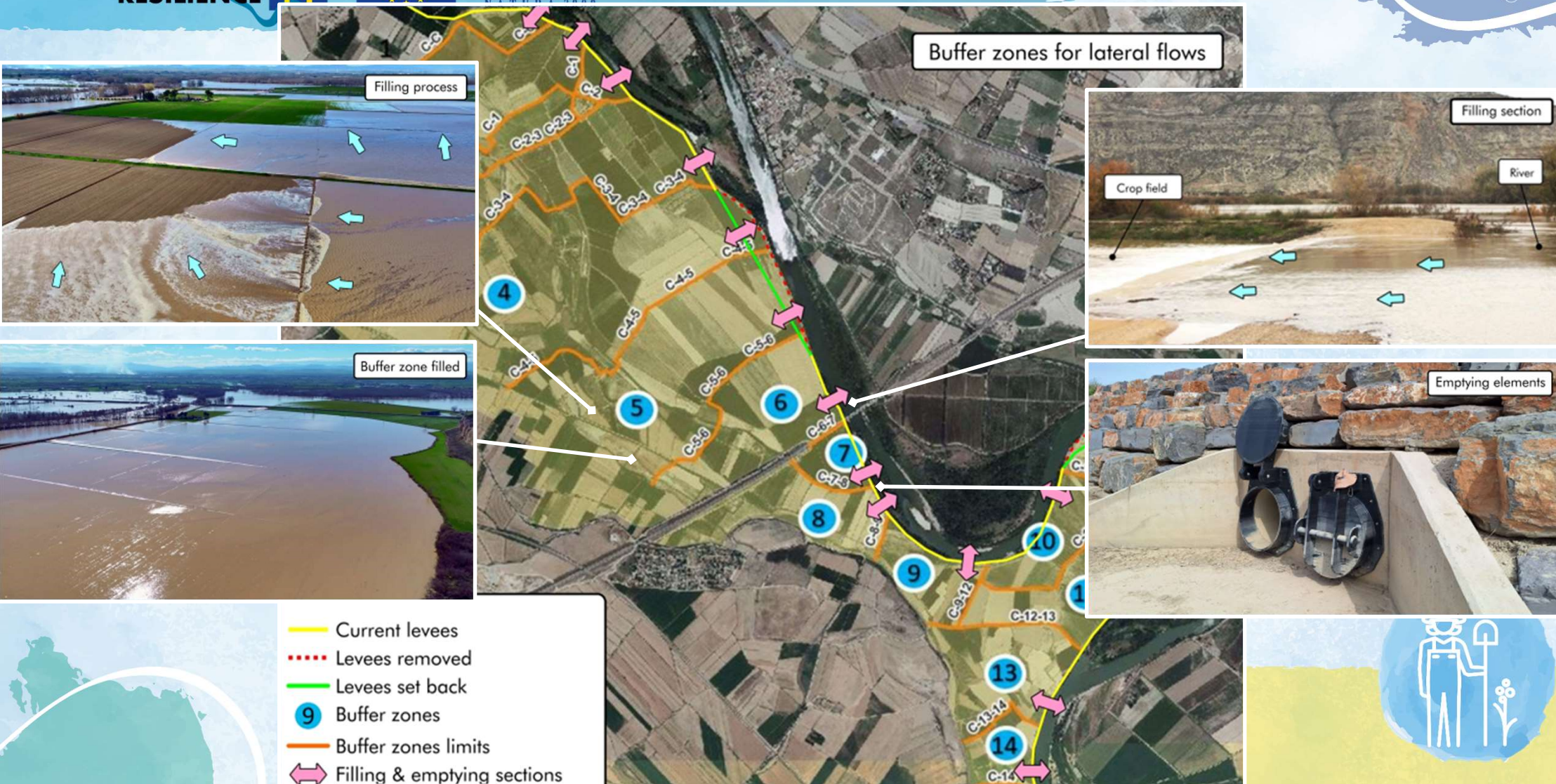




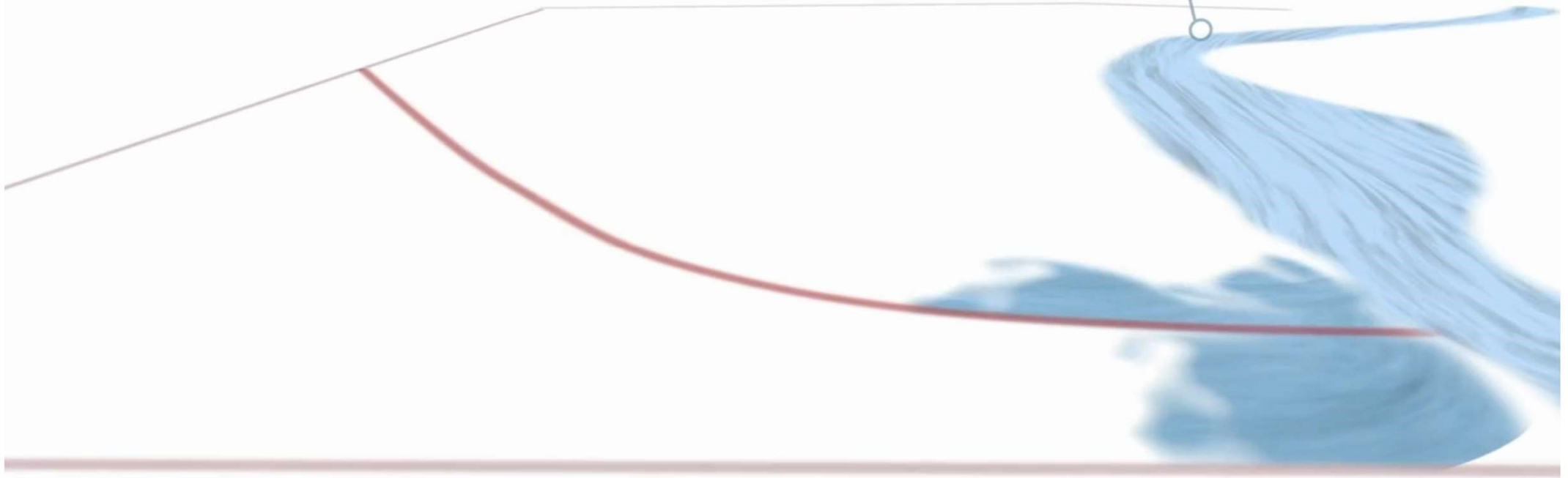
ZONE 2 - BZLF



ZONE 2 - BZLF



CAUCE
PRINCIPAL





Actions Participation and capacity building

- 3 Working groups.
- 6 Co-creation groups.
- 1 Group to manage the conflicts.
- 18 Participation actions.
- 16 Capacity building with local population.



Diffusion and networking actions

- Flood risk management and river restoration can be combined for mutual benefits.
- **Inter-administrative coordination** facilitates the implementation of interventions, both in terms of processing and social acceptance.
- Working teams should be professional, broad-based and multidisciplinary.
- **Public participation** processes are essential for the understanding and acceptance of major river restoration actions, as long as these processes are real, truthful and take place at a time when all options are still open.
- **Negotiation skills** allow agreements to be reached even if they are not optimal.
- Patience and good sense of humour.





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THANK YOU!