

Métropole Nice Côte d'Azur Permeable City Strategy

24 April 2026



The Métropole Nice Côte d'Azur in a nutshell

1- Rationale for the Permeable City Strategy

2- How is water currently managed?

3- Strategy overview

Nice Côte d'Azur Metropolis

1400 km²

4 territorial subsystems:



Coastal territory



Urban areas / cities



Rural areas



Mountain areas

► 51 municipalities, over 500,000 inhabitants

► Key territorial competences to accelerate the ecological transition:

- Mobility
- Urban planning & greening
- Energy
- Waste Management
- Renewable energy
- Water Management
- Biodiversity protection and preservation



Nice Côte d'Azur Metropolis

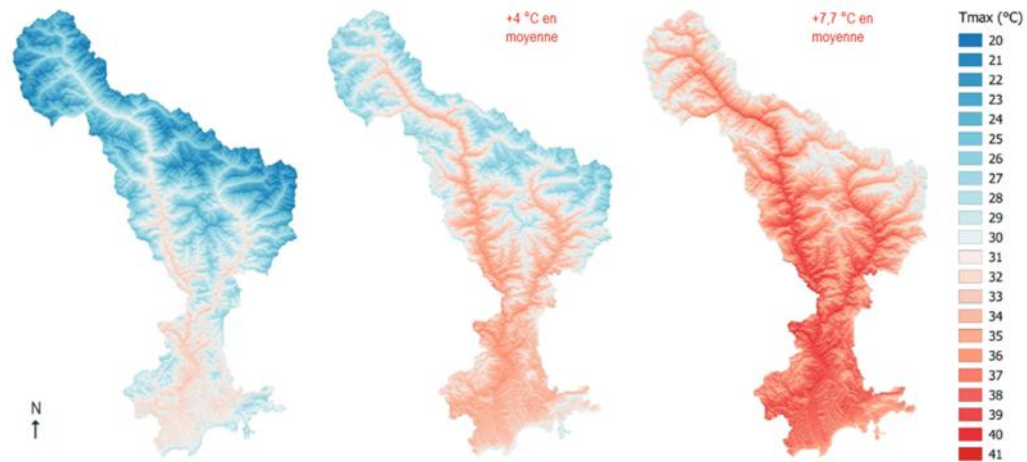
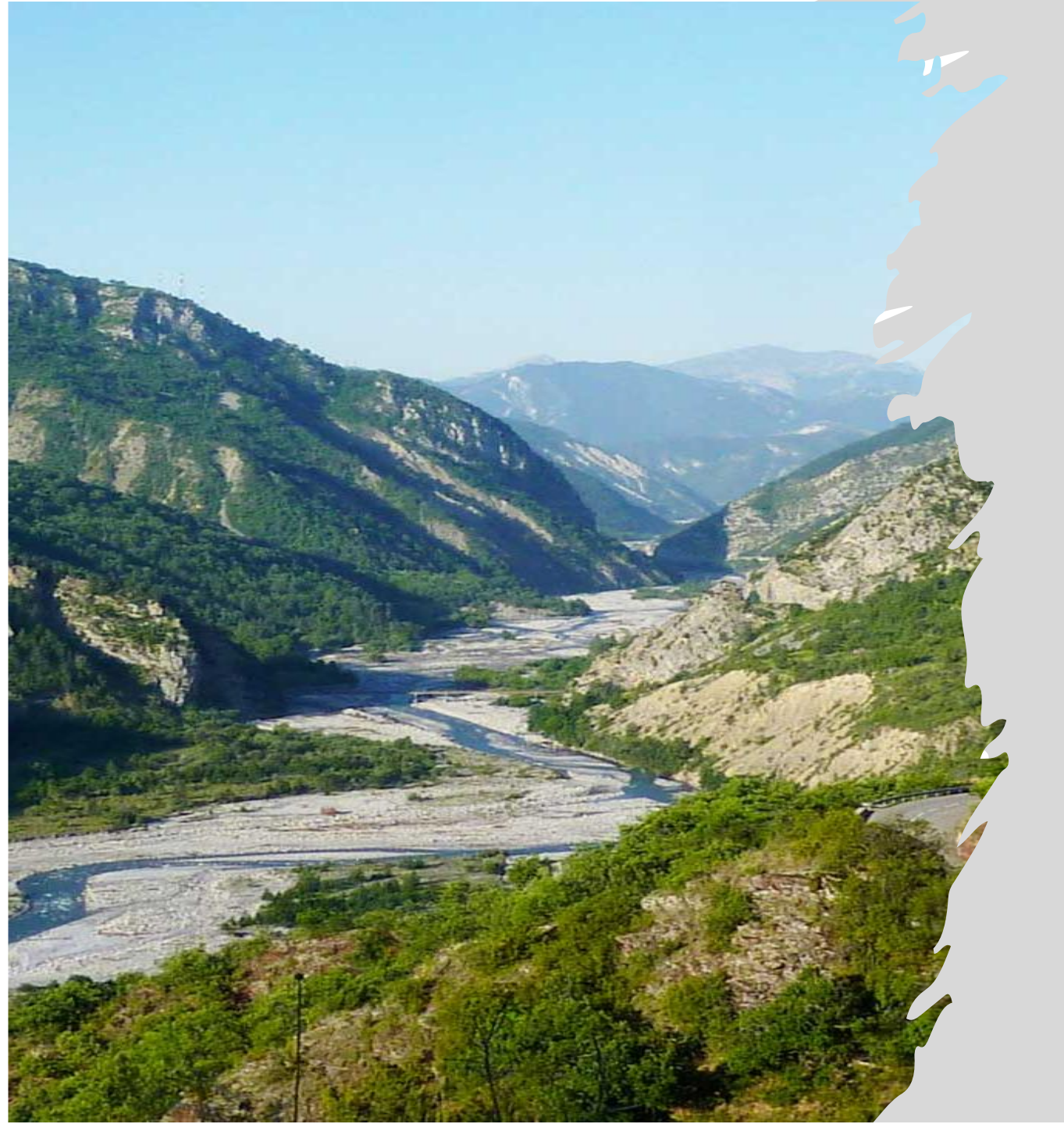


Figure 6. Évolution des températures maximales extrêmes (percentiles 90%) en juillet sur le territoire NCA, modèle ALADIN-Climat, RCP 8.5 : période 1986-2005, à gauche ; période 2046-2065, au centre ; période 2081-2100, à droite (source : Nicolas Martin, UMR ESPACE, Université Côte d'Azur).



Part 1

Rationale for the permeable city strategy



The origin: why a new strategy was needed?

Convergence of factors 1/4



A wake-up call: the 2022–2023 extreme droughts

Exceptional water deficits across France and Southern Europe, including Nice (Lac du Broc)



The origin: why a new strategy was needed?

Convergence of factors 2/4

☁️ **A structural imbalance in the water cycle**

More frequent droughts and intense rainfall events

Water runs off rapidly instead of infiltrating

Soils no longer retain and regulate water



The origin: why a new strategy was needed?

Convergence of factors 3/4

⚡ Limits of existing policies

- Focus on supply, drainage, and crisis management
- Grey infrastructure dominant (pipes, networks)
- Acting downstream, not addressing root causes



The origin: why a new strategy was needed?

Convergence of factors 4/4

✗ 🌿 A weak operational framework

- Water not integrated early enough in urban planning
- Lack of tools to act on soils, infiltration, and land use
- Fragmented governance across sectors

=> Water remained a constraint to manage downstream, rather than a structuring parameter upstream



The origin: why a new strategy was needed?

Public policies manage water flows but:

✗ Do not restaure the water cycle

Even worse

⚠ Contribute to the disruption of the water cycle

Faced with accelerating droughts and increasingly destructive storm events:

- we needed a new framework to act upstream—on soils, infiltration, and land-use practices
- rather than only downstream on networks and infrastructure.

Action needed: rebalance the water cycle to build long-term resilience to droughts and floods

Part 2

How is water currently managed



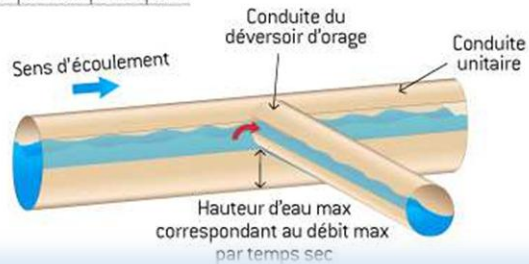


Current systems based on collection and conveyance

Significant infrastructure:

- Combined sewer systems (133 km), representing 1/10th of the network
- Separate sewer systems (1,379 km)
- Wastewater treatment plants: 51 facilities

• Cas par temps de pluie



Current systems based on collection and conveyance

Significant infrastructure:

Combined sewer systems (133 km), representing 1/10th of the network

Separate sewer systems (1,379 km)

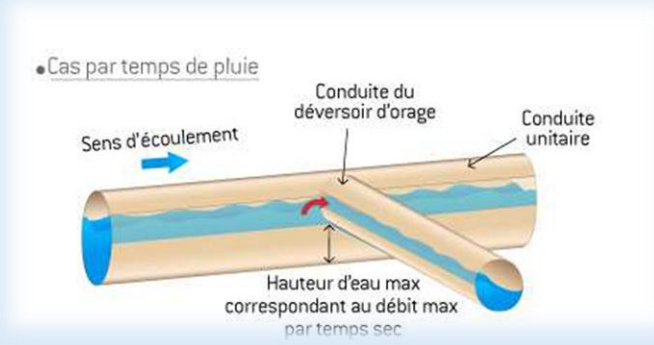
Wastewater treatment plants: 51 facilities

Resulting issues:

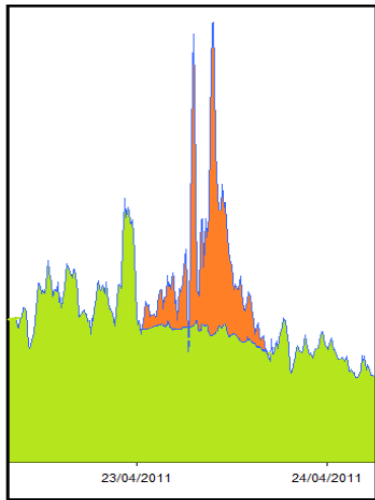
Oversizing of treatment facilities (designed at 2.75 times higher capacity due to rainfall events)

Risk of pollution to receiving environments, particularly in combined sewer systems (in Nice: 3.4 million m³ of water collected, of which approximately 1/3 is discharged into the natural environment)

High investment and operational costs



Impacts of Stormwater Collection on Infrastructure



	Volume de temps sec traité en STEP en moyenne par an (m ³)	Volume de pluie traité en STEP en moyenne par an (m ³)	Volume déversé au milieu naturel par temps de pluie (m ³)	Volume total d'eaux pluviales générées par les surfaces actives (m ³)	Pourcentage d'eaux pluviales générées par les surfaces actives / Volume total généré (%)
	A	B	C	B+C	(B+C)/(A+B+C)
NICE	33 300 000	2 400 000	1 000 000	3 400 000	9%
CAGNES/MER	5 700 000	300 000	190 000	490 000	8%
ST LAURENT DU VAR	3 800 000	200 000	150 000	350 000	8%
VENCE	850 000	100 000	200 000	300 000	26%

Between 8% (Cagnes/Mer) and 26% (Vence) of the collected water is stormwater

Representing annual volumes ranging from 0.3 (Vence) to 3.4 million m³ (Nice)

Capital costs

	Volume de temps sec traité en STEP en moyenne par an (m³)	Volume de pluie traité en STEP en moyenne par an (m³)	Coût total (€)	Coût Part Eaux usées (€)	Coût Part Eaux Pluviales (€)
NICE	33 300 000	2 400 000	500 000 000	250 000 000	250 000 000
CAGNES/MER	5 700 000	300 000	100 000 000	50 000 000	50 000 000
ST LAURENT DU VAR	3 800 000	200 000	30 000 000	15 000 000	15 000 000
VENCE	900 000	110 000	21 000 000	10 500 000	10 500 000

Operating costs

	Volume de temps sec traité en STEP en moyenne par an (m³)	Volume de pluie traité en STEP en moyenne par an (m³)	Coût total (€)	Coût Part Eaux usées (€)	Coût Part Eaux Pluviales (€)
NICE	33 300 000	2 400 000	17 000 000	15 600 000	1 400 000
CAGNES/MER	5 700 000	300 000	2 400 000	2 290 000	110 000
ST LAURENT DU VAR	3 800 000	200 000	1 730 000	1 650 000	80 000
VENCE	900 000	110 000	1 015 000	900 000	115 000

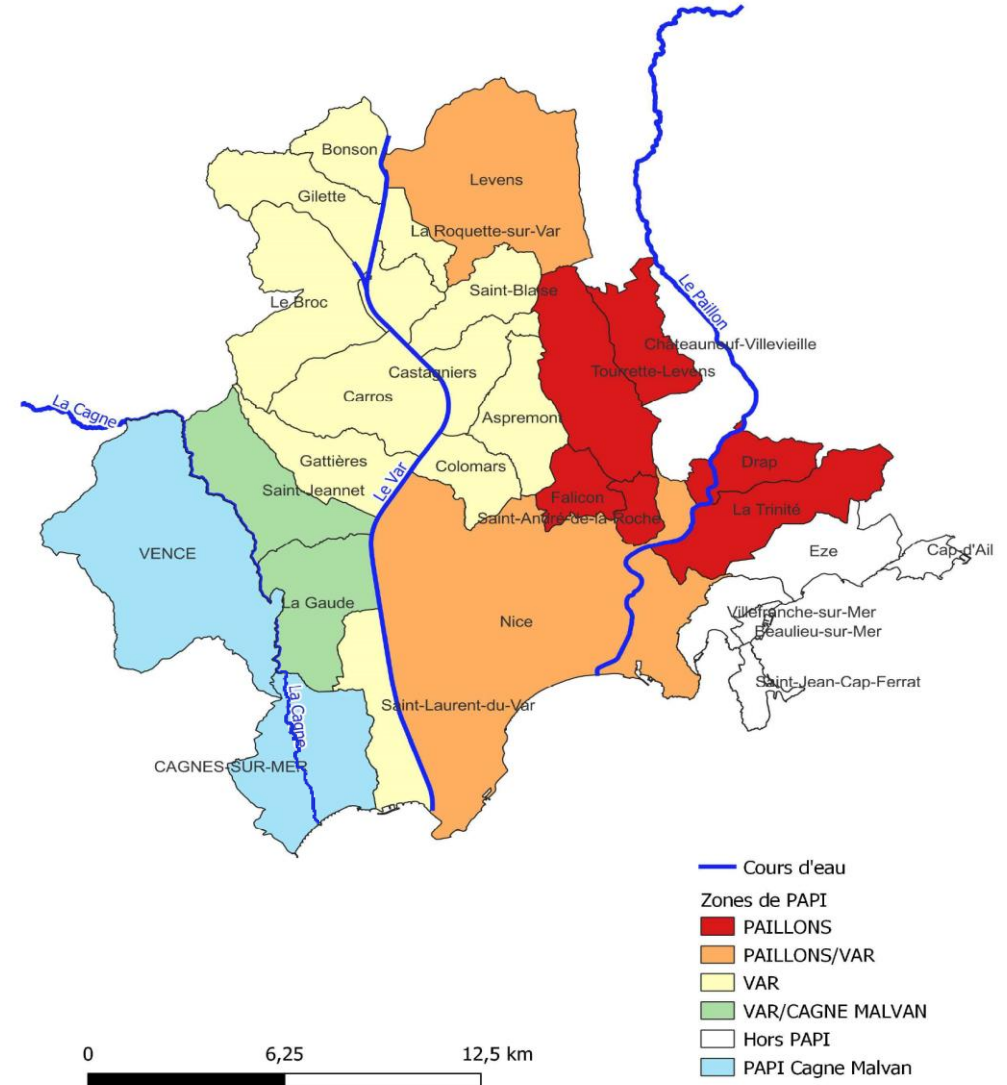
Wastewater treatment plants are sized based on peak flows during rainfall events, which can account for up to **50% of total capital costs (€10.5M–€250M)**.

 Stormwater inflows also generate **operating costs of €0.1M to €1.4M per year**, depending on the infrastructure.

Existing initiatives supporting the permeable city

In terms of regulatory framework : stormwater runoff master plans and zoning (SDEP)

- Implemented by the Water Cycle and Flood Management Department since October 2022,
- Across 29 municipalities in the southern part of the Metropolis, which are highly urbanised : Var, Paillons, Cagne-Malvan, and the eastern coastline.

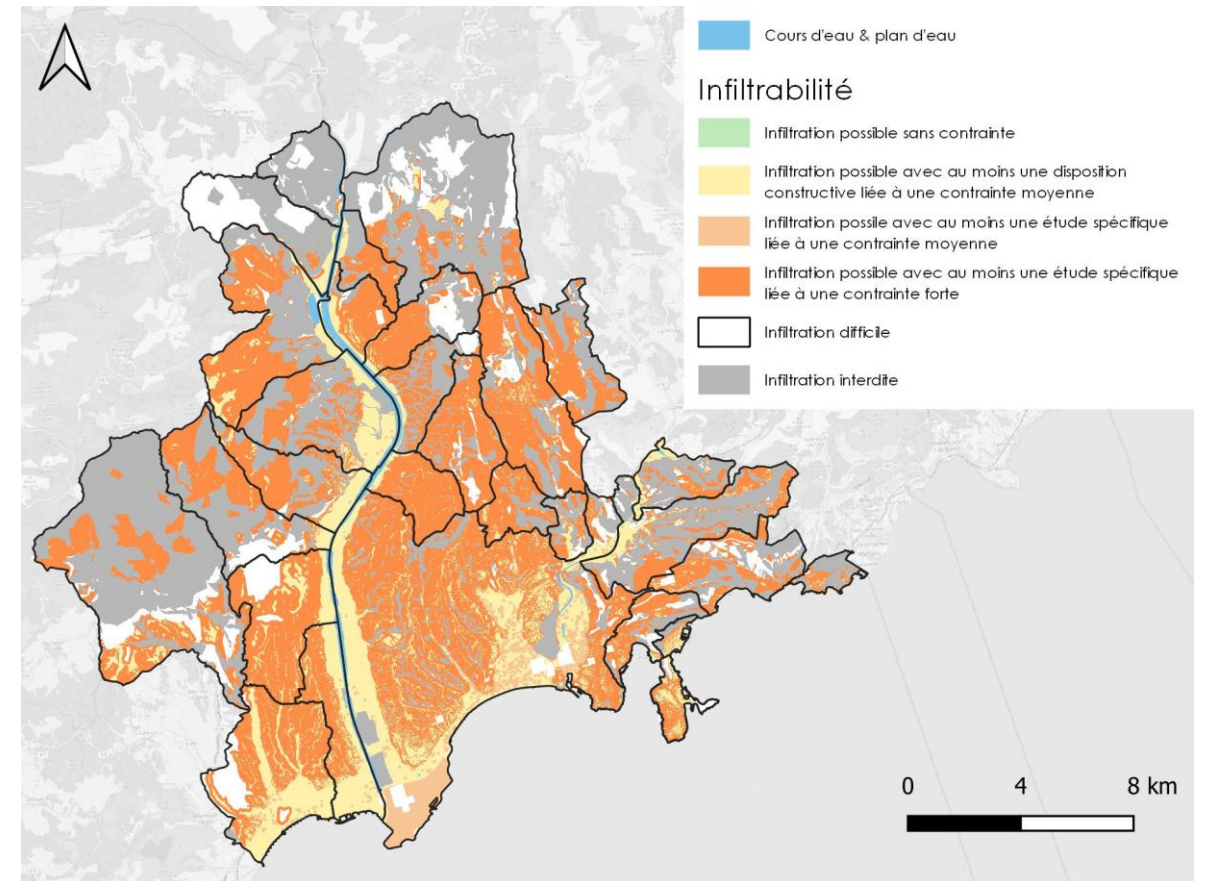


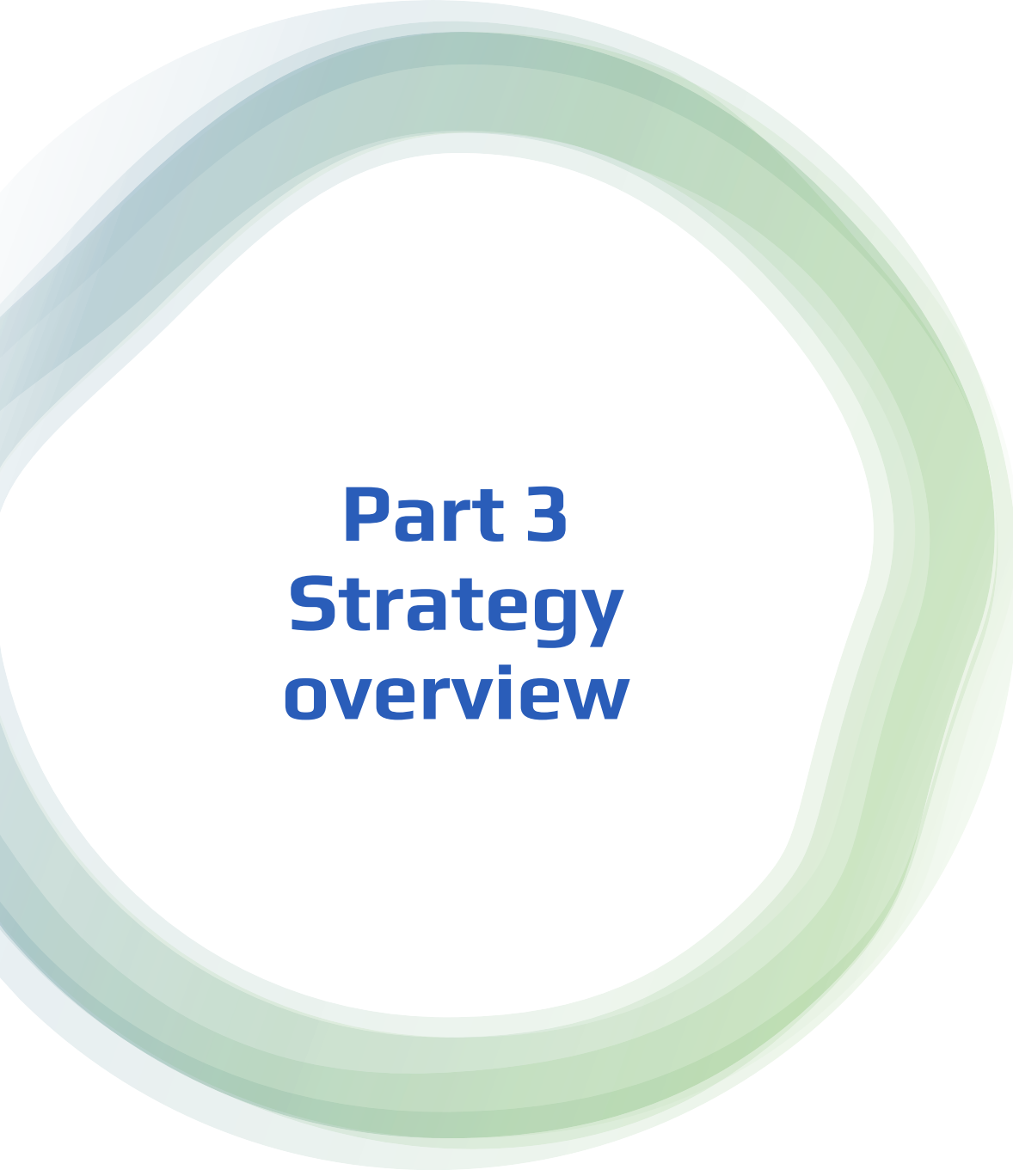
Périmètre des études d'élaboration des schémas de maîtrise du ruissellement

A major step forward and a foundational regulatory framework to guide the Permeable City

 →  Significant theoretical potential for **de-sealing : 3,952 ha** (public and private surfaces)

- More complex areas to mobilise





Part 3 Strategy overview

 Anticipating the permeable city
through planning

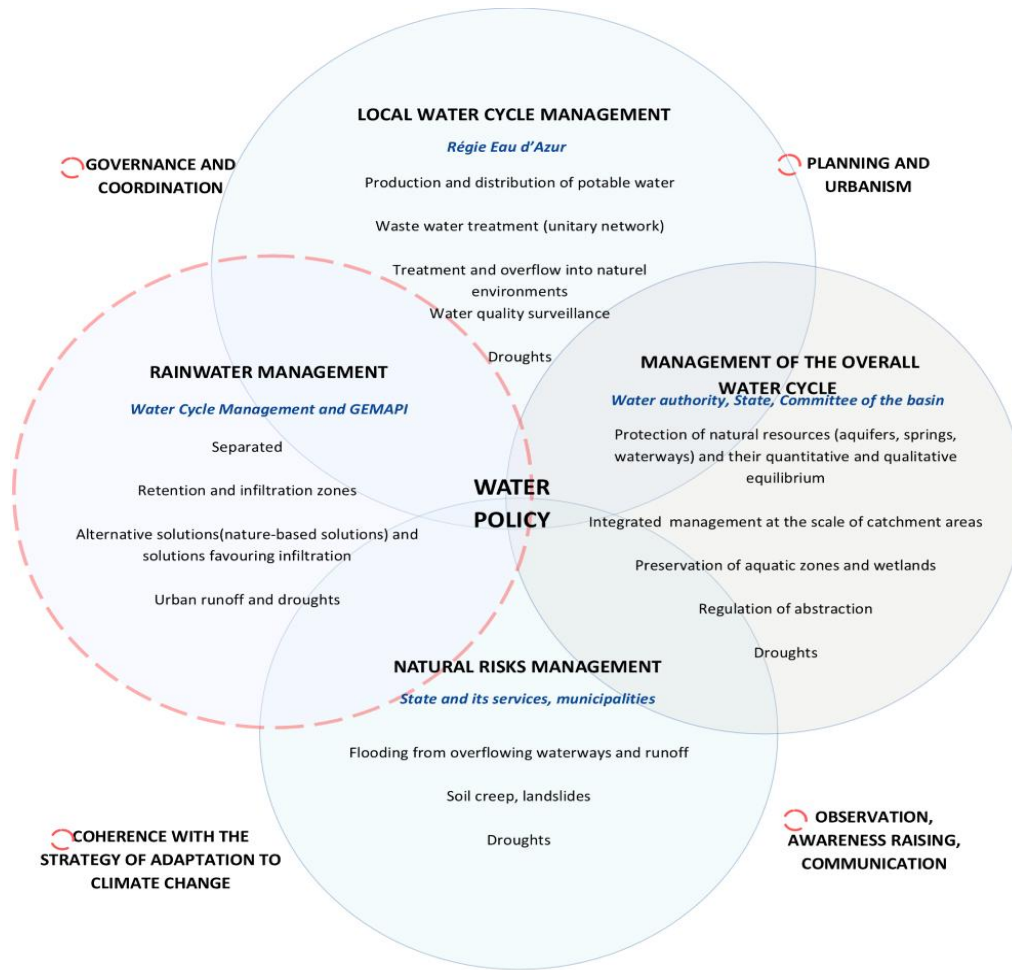
 Building out the permeable city

 Organising governance, coordination,
partnerships and follow-up of the approach

 Deploying the permeable city strategy 2025-
2035



The Permeable City within the overall water management policy



- Making the city permeable by ensuring alternative management of rainwater is a component of overall water management policy
- It is aimed at rebalancing/restoring the water cycle, which is effectuated by a change of paradigm with the integration of water into land management

=> Integrating water as ecological infrastructure and repairing its natural cycle

An aerial photograph of a coastal city, likely Nice, France. The image shows a dense urban area with red-tiled roofs, a large green park area in the center, and a blue body of water in the background. A large white circular overlay is positioned on the left side of the image, containing the text "Anticipating the permeable city through planning" in blue. The text is arranged in four lines: "Anticipating the", "permeable city", "through", and "planning".

Anticipating the permeable city through planning

Updating regulatory technical documents

Roadway regulations

Switch from the principle of water evacuation to the principle of infiltration

Strengthen planted zones, prioritise alternative, nature-based techniques by preserving safety hydraulic

Proposals to be discussed in a dedicated working group

Sanitation regulations

Privilege total or partial infiltration of a parcel, unless demonstrable impossibility

Make additions to chapter 4 pertaining to rainwater management:

- compensation of all prepared surfaces including on existing water-proofed zones
- obligation to study infiltration feasibility of the parcel and to conduct a hydrological study
- obligation to respect natural hydrology
- Recommendation of green solutions
- limitation of wastewater flows from 50m² of active paved surfaces instead of the current 300m²
- Minimum storage ratio of 80l/m² of active surface, or a 30-year occurrence

Evolutions of the city's Local Urban Plan (LUP)

Sustainable development project

- Favour **nature-based rainwater management solutions**, add value to stormwater, favour infiltration and retention at the source reduce run-off and storm sewer overflows
- Integrate public health into operations and act on **urban heat islands**

Regulatory measures

New measures favouring permeability

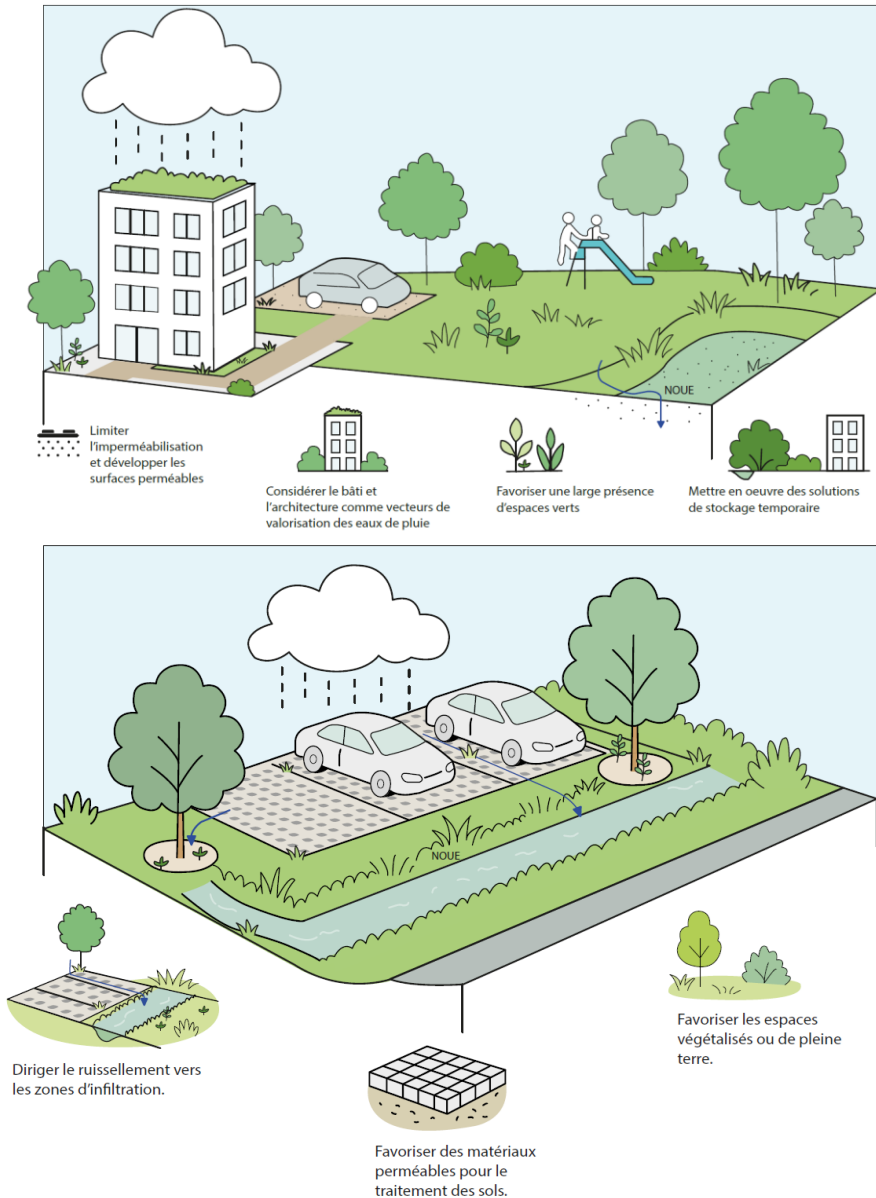
- **Rules of alignment**: the setback between roadway/buildings will be a shared space, serving management of rainwater
- **Grading rules**: zones of open ground at low points to facilitate infiltration, unless demonstrable impossibility
- **Biotope coefficient**: zones of open ground will contribute to stormwater management

Implementation of a “Water Cycle” OAP (Planning and Development Guidelines)

□ A tool for dialogue, collaborative urbanism and affirmed legibility of the ambition being promoted, in coherence with the other territorial stakes (OAP energy ...)

□ A new transversal approach to water resources:

- Preservation of potable water
- Integrated rainwater management based on depaving, infiltration and retention at the source
- Add value to waterways and their banks as structural ecological and landscape networks
- Reclassification of urban spaces with regard to their hydrological and climatic role



Planning -

The Monitoring Committee approvals

- Validation of the principle of , total or partial rainwater infiltration into the parcel, as a general rule, the evacuation only being allowed in case of demonstrable impossibility
- Validation of the modifications of the Wastewater and Sanitation regulations governing rainwater management
- Organisation of a working group dedicated to updating roadway regulations
- Validation of modifications of the city's LUP in favour of permeability
- Validation of the implementation of a “Water cycle” OAP (Planning and Development Guidelines)

An aerial photograph of a coastal city, likely Nice, France. The image shows a dense urban area with red-tiled roofs in the foreground, a large green park area in the middle ground, and the blue sea in the background. A large white circular overlay is positioned on the left side of the image, containing the text "Building out the permeable city" in blue. The text is arranged in three lines: "Building out", "the permeable", and "city".

Building out the permeable city

Rolling out the permeable city across the territory

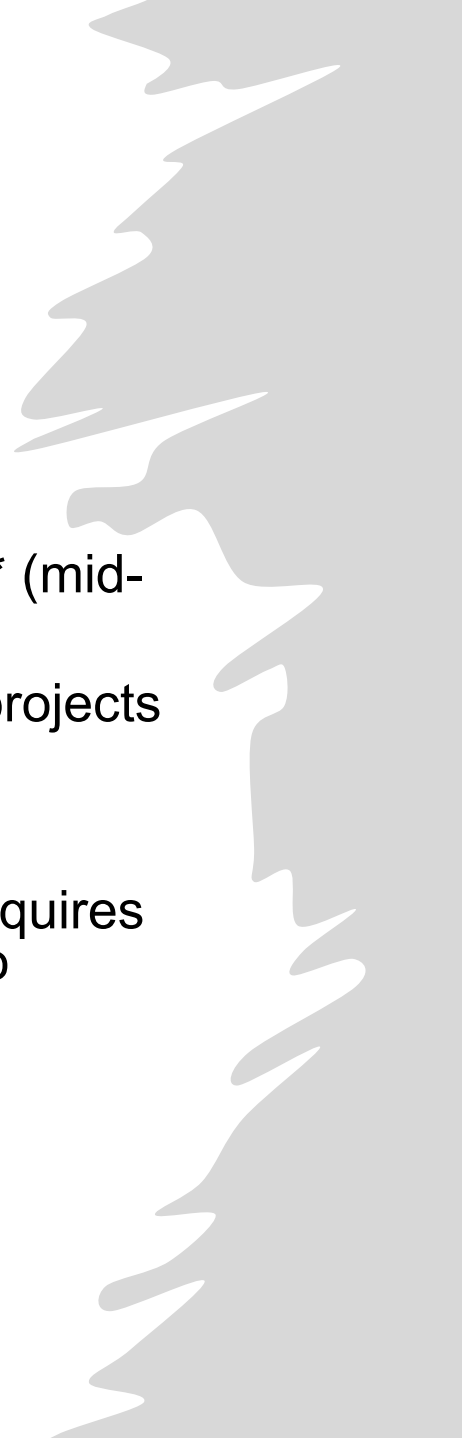
Developing the permeable city across the entire metropolitan area, taking into account its diverse territorial contexts

➤ **Distinct challenges** between the Upper Country and the Southern sector / SDEP* (mid-country and coastal areas)

BUT a consistent integration of permeable city principles is expected across all projects located in artificialised areas of cities and villages within the Metropolis

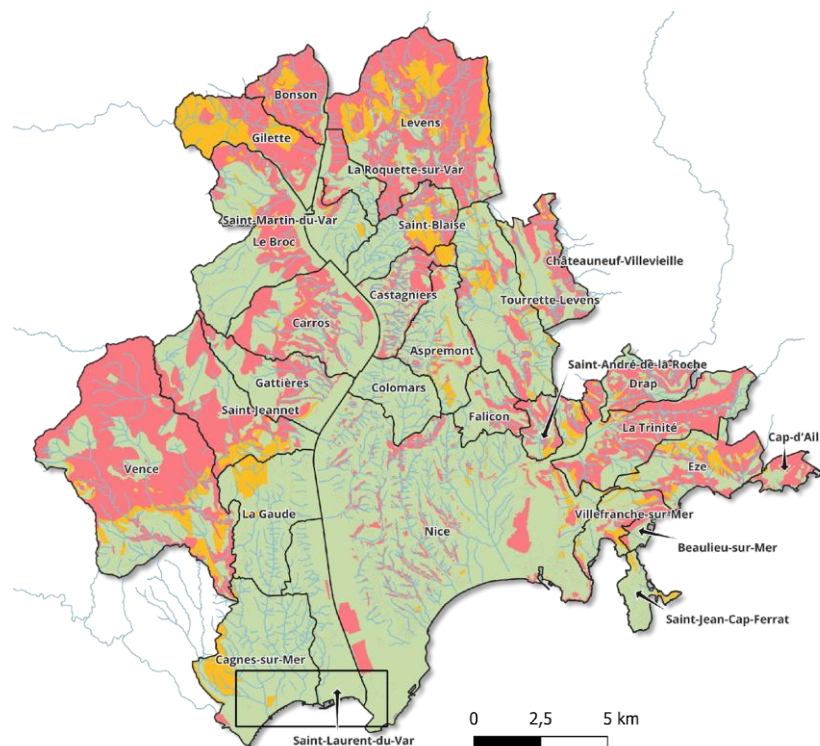
➤ **In the Upper Country**, water management responds to specific challenges and requires tailored approaches to slow down, spread, and restore water pathways from slopes to valleys (implementation of a regenerative hydrology demonstrator)

➤ **Any constraints preventing** implementation must be demonstrated by project developers (regulatory restrictions, geo-physical factors, etc.)



The South Metropolitan sector

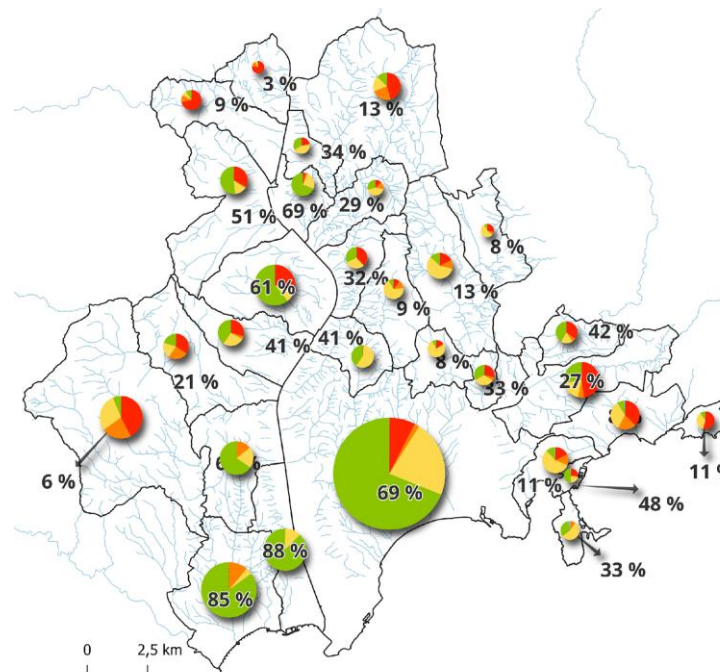
- Strongly promote the permeable city on a sector concentrating the key challenges and studied by the SDEP



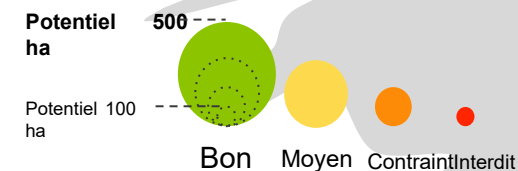
Zones d'exclusions ou d'études de la ville perméable

- Infiltration totale ou partielle à étudier
- Infiltration contrainte : faisabilité à démontrer
- Infiltration interdite
- Axes de ruissellement

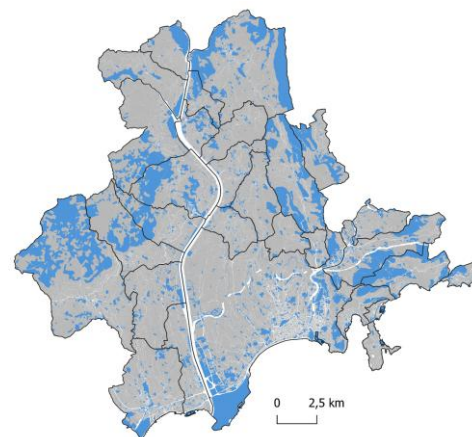
1. An important overall potential on this sector



Mer, Saint-Laurent-du-Var: the most favourable (close to 100%), with strong economic vocations, also represent important industrial areas of the sector presenting a **good infiltration**



2. Large proportion of private action, supervised by the new regulatory measures



Public property: ~ 25% of the SDEP

Roadways, public squares, car parks

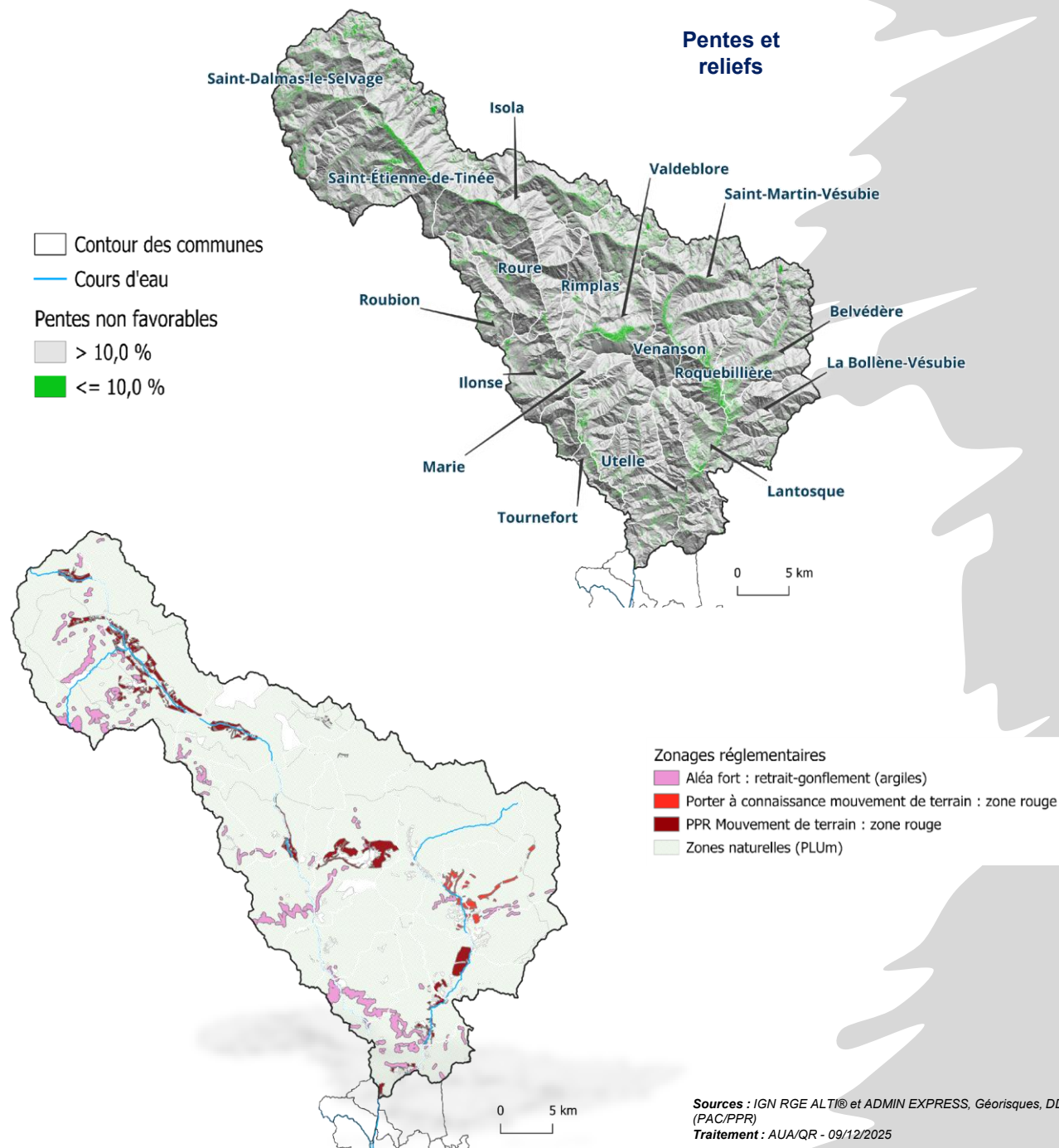
Highlands

- Combine slopes and risks on a sector that remains much less urbanised

96% of zones N
3.4% of zones A
0.6% of zones U and AU

A marked relief, with most slopes greater than 10%

High risk sectors with terrain creep and swelling and shrinking of clay soils



An approach already initiated by the project owners

Several experimental sites:

- Promenade du Paillon - phase 2 (Renaturing, disconnection)
- Drap - Rue Arnulf (Depaving of 30% of the ground and tree planting)
- Nice - Place Goiran (Greening, 1,300 m² of pervious concrete and 150ml of pervious trenches)
- St Laurent – Avenue de Gaulle (30% of project surfaces and 110 planted trees)
- La Trinité – Bike path

Avenue de Gaulle – Saint Laurent du Var



Several construction sites underway

- Grand Parc de la Plaine du Var
- Square Bènes
- ZAC La Villette (permeable ground covering, green surfaces, disconnection, rain tree...) and 3Ha of landscaped park



préconisations techniques
innovantes fondées sur la nature
de la Gestion intégrée des eaux
pluviales (GIEP)



8000 m² de d'espaces piétons
arborés et pistes cyclables



5000 m² terrasse végétalisée

W&A WILHOTTE & ASSOCIÉS ARCHITECTES
Bougues Immobilier

Focus on Place Goiran - Nice

Objective: transform the intersection into a green zone, integrating rainwater management at the source

A “model project” for Eurovia, with the MNCA as Project Owner

Solutions: drainage trenches, permeable ground covers, water redirected towards green zones (Revilo®) - Sustainable Drainage Systems - Bioswales

Examples of public space projects with integrated management in NCA

Follow-up measures:

Measure

water availability



Tensiometric measurement

soil moisture

Assess

tree health



Dendrometric sensors

evapotranspiration & growth

Evaluate impact

Urban Heat Island



Instrumented walk

Weather station
Temperature, humidity,
Thermal comfort



A few figures:

−4.5°C

Perceived thermal comfort over a day in August 2025

1 microdendrometric monitoring

Monitoring the health status of planted trees

Tensiometric stations

To measure root development

Policy scale-up - The Monitoring Committee approvals

- Validate the **deployment of the permeable city** across the entire metropolitan territory, with the methods adapted to the specific characteristics of the Highlands and the Southern sector / SDEP (Middle country and coastline)
- Acknowledge the integration of the principles of permeable cities in all the **public and private projects** situated in artificial ground cover zones
- Promote **nature-based solutions** 🌳
- Condition all exemptions on their duly demonstrated regulatory or geo-technical impossibility

An aerial photograph of a coastal city, likely Nice, France. The image shows a dense urban area with red-tiled roofs, a large green park area with palm trees, and a blue body of water in the background. A large white circle is overlaid on the left side of the image, containing the text "Governance, coordination and follow-up strategy" in blue.

Governance, coordination and follow-up strategy

Transversal governance & Partnerships



Rely on **strong technical and financial partnerships**:

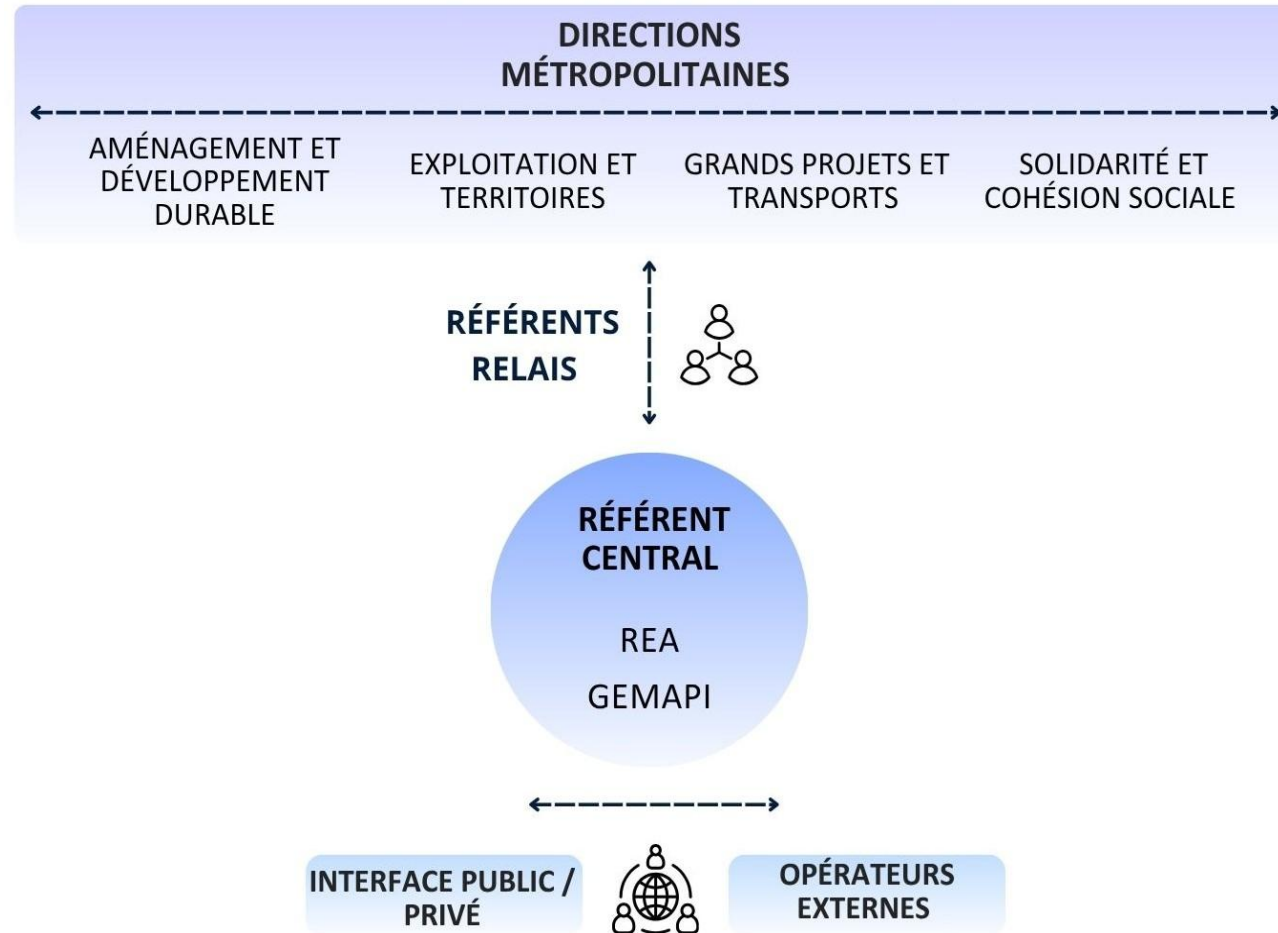
Within NCA: technical Water, Public Spaces, Roads, Planning, Green spaces... The National Water Agency, NCA Urban Agency, the water and sanitation utility (REA), the University Water Chair, Cerema*, and associations



From mobilised, pro-active but unpredictable management to the implementation of a **dedicated and legible organisation**:

- An dedicated Office of Sustainable Rainwater Management with Lead internal contacts
- An annual strategy committee for evaluation and follow-up

**A national public agency supporting local authorities in sustainable planning, mobility, and infrastructure*



Keeping the approach alive

Raising public awareness, namely through a communication strategy in connection with water

Internal training

The engagement of a shared culture of project owners: awareness raising actions and production of a methodological guide (Cerema)

Dedicated Web page on the Métropole site



N° NOVA : 24-ME-0256

Produit conçu avec le système de management de la qualité certifié AFNOR ISO 9001

A permeable city observatory beginning in 2026

- An interactive mapping cross-referenced with project datasheets

□ Example of visualisation:

- Development projects integrating the permeable city



The observatory will make possible a more precise definition of quantified objectives, thanks to its work collection of project data

Follow-up indicators

Nom de l'indicateur	Méthode de calcul	unité	objectif	Valeur 2025
Nombre de projets d'aménagement estampillés "ville perméable"	dénombrement	A l'unité		
Pourcentage de projet VP/Somme des projets	ratio	pourcentage	95%	
Surface déconnectée via les projets ci-dessus	Mesure des surfaces des bassins versants dé raccordés	hectare		
Surface désimperméabilisée	Mesure des surfaces concernées au sein des projets	M²		
Volume de pluie supplémentaire infiltré dans le sol	hauteur de pluie annuelle (< 15 mm/24h) X surface desimper	M3		
Surface active raccordée à la station d'épuration	Campagne de mesure (modélisation après création du modèle)	hectare		
Evolution de la surface active raccordée à la step	1-Valeur (n+1)/valeur (n)	pourcentage	- 0.2%	
Evolution du biseau salé	En hauteur ngf	graphique		

MNCA

Nice

Governance and follow-up- The Monitoring Committee Proposal

- Validation of the creation of a Sustainable Rainwater Management Office (BGDEP): working group to mobilise to specify the methods
- Implementation of a web page dedicated to the permeable city
- Engagement of the permeable city observatory
- Pursuit of thinking about the implementation of an aquapuncture platform

What the Strategy Changes

A shift driven by crisis

- From reacting to droughts → to preventing their impacts
- From “evacuating water” → to “retaining water in soils and landscapes”

New operational priorities

- Restore infiltration and soil water storage capacity
- Slow runoff at source (urban and rural areas)
- Enhance groundwater recharge and ecosystem resilience



What the Strategy Changes

A new policy framework

- Integrate water into planning and project design from the outset
- Deploy nature-based solutions (soils, vegetation, landscape features)
- Bridge sectors: water, urban planning, climate adaptation

→ **Objective:**
Rebalance the water cycle to build long-term resilience to droughts and floods



An aerial photograph of a coastal city, likely Nice, France. The image shows a dense urban area with red-tiled roofs, a large green park area with winding paths, and a blue body of water in the background. A large white circular overlay is positioned in the center-left of the image, containing the text 'Deploying the permeable city 2025-2035' in a bold, blue, sans-serif font.

Deploying the permeable city 2025-2035

The Permeable City Strategy

A systemic approach mobilising all planning, regulatory, technical and financial levers

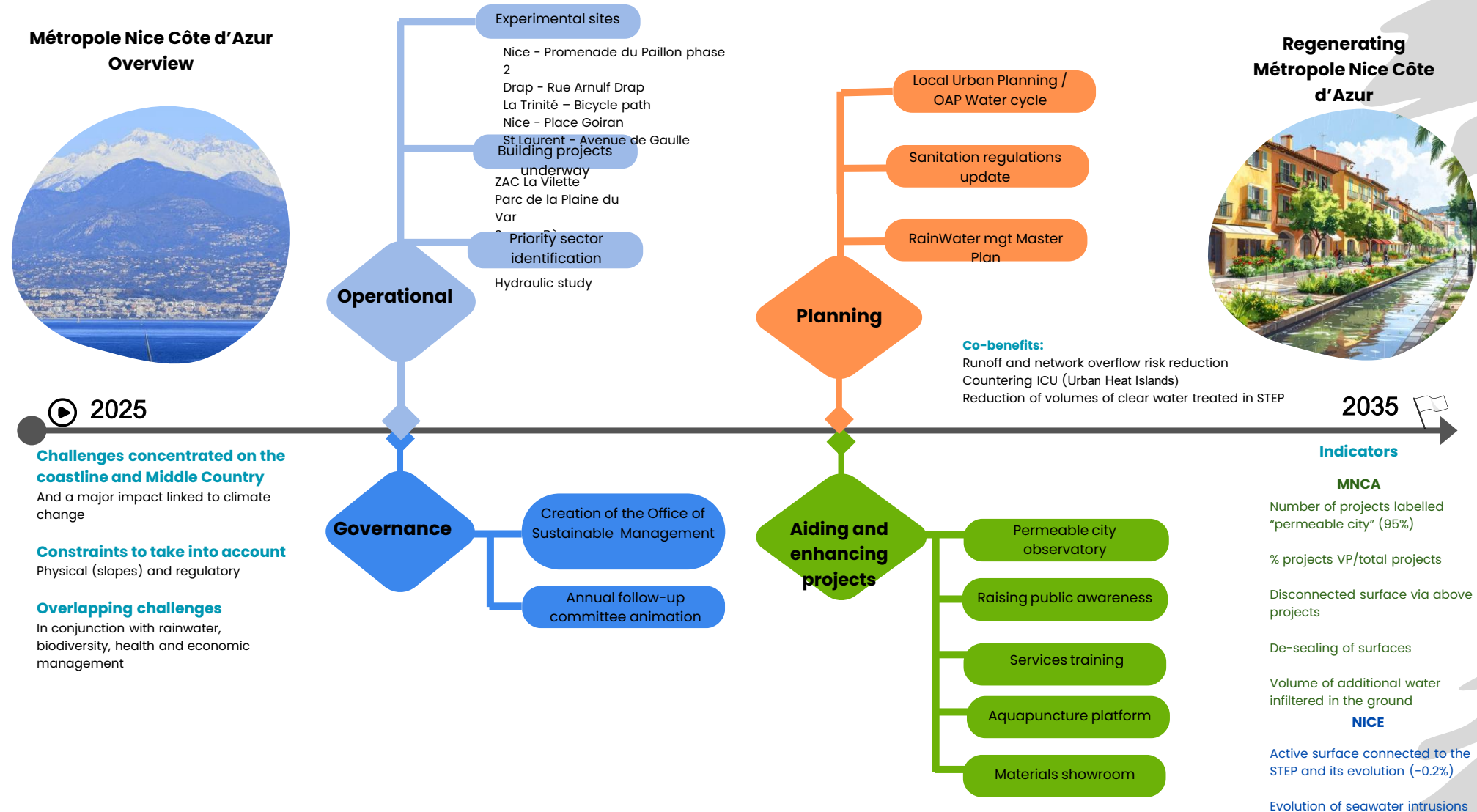
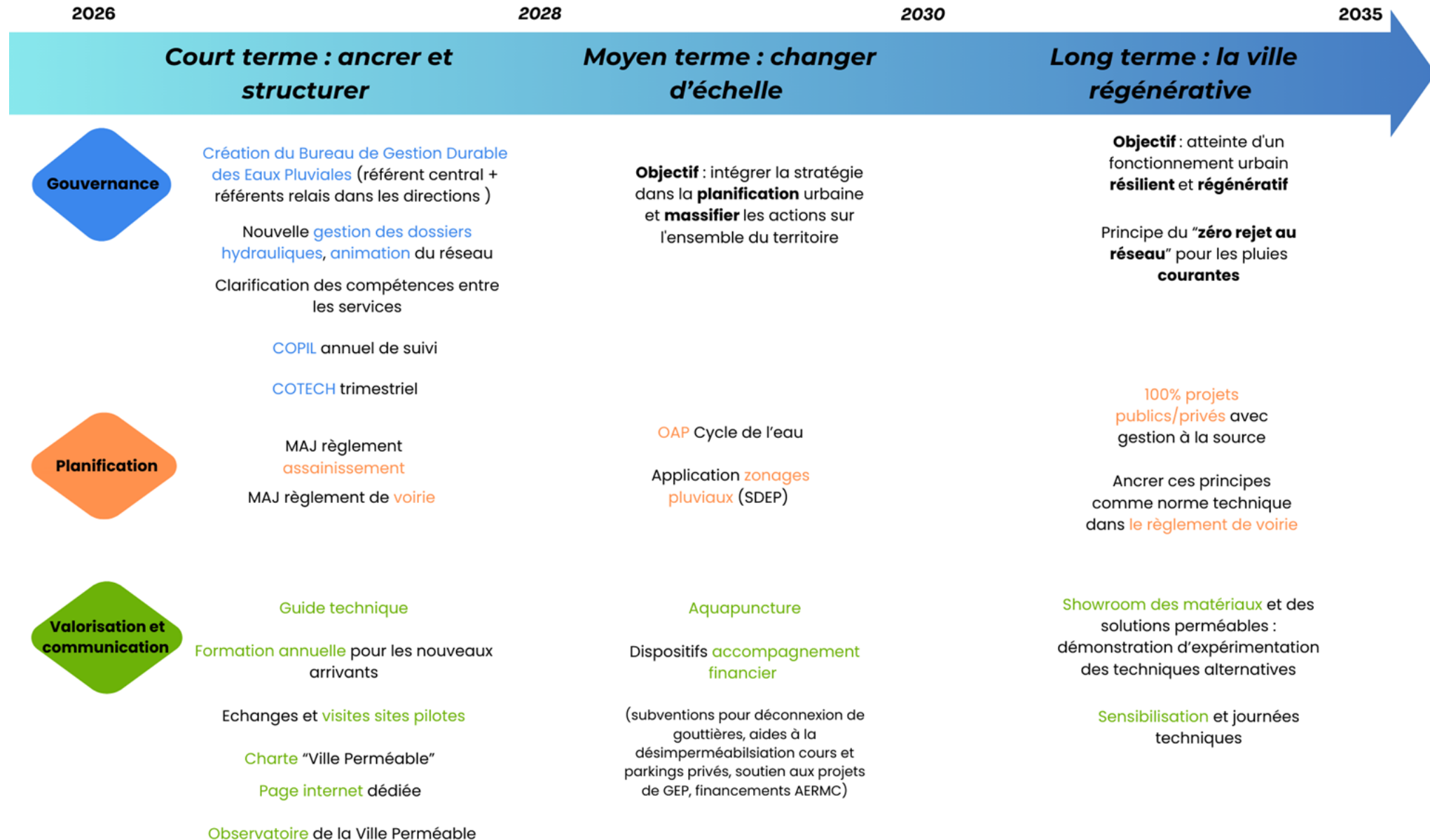


Schéma de phasage de la stratégie Ville Perméable



Permeable city phasing

PHASE	DÉTAILS	2026												2027												2028												2029											
		T1			T2			T3			T4			T1			T2			T3			T4			T1			T2			T3			T4			T1			T2			T3			T4		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1	Governance	COPIL																																															
		COTECH																																															
		Creation of a rainwater management office																																															
2	Implementation of operational tools	Regulations, waste water sanitation and rainwater																																															
		Training newcomers																																															
		Study of sectors with the most important benefits																																															
		Production of the permeable city charter for use by usage contractors																																															
3	Integration of the permeable concept in the urban planning	Revision of the metropolitan Urban Planning																																															
		Application of new rainwater zoning																																															
4	Project aid and promotion tool	Aquapuncture																																															
		Permeable City Observatory																																															
		Materials showroom																																															
		Solution presentation sheets																																															



THANK YOU FOR YOUR ATTENTION

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