

Retour d'expérience sur deux projets européens

IRIS
ReUseHeat

Philippe MAILLARD - philippe.maillard@veolia.com
BS&P - Département Expertise Scientifique & Technologique

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IRIS

Integrated and Replicable Solutions
for Co-Creation in Sustainable Cities

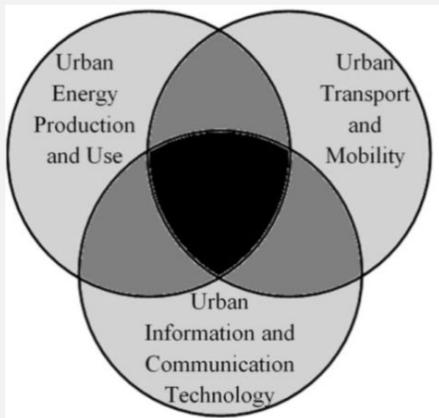


REUSEHEAT

Appel à Projets Smart Cities and Communities

Objectifs et exigences

- **Démonstrateurs exemplaires, de grande taille, basées sur des technologies existantes et reproductibles (TRL > 7)**, pour atteindre les objectifs européens de réduction des émissions de GES et d'amélioration de la qualité de l'air, tout en apportant des bénéfices sociaux (réductions des charges, créations d'emplois)



- **Approche intégrée via trois thématiques** (production et utilisation de l'énergie / rénovation thermique / quartier à énergie positive, mobilité urbaine et TIC) dans une approche territoriale cohérente avec les schémas d'urbanisme des collectivités



- **Reproductibilité des solutions pour un déploiement rapide au niveau des collectivités, en utilisant les fonds structurels**
- **Budget : 60 M€ en 2016 et de 69,5 M€ en 2017,**
- **17 consortiums ont préparé des projets en 2017**

Résultats Appel à Projets Smart Cities and Communities 2017

IRIS (14,5/15) : Integrated & replicable solutions for co-creation in sustainable cities

- Coordinateur : Pays-Bas
- Villes pilotes : Utrecht (NL), Göteborg (SE), Nice (FR)
- Villes suiveuses : Vaasa (FI), Alexandroupolis (GR), Santa Cruz de Tenerife (ES), Focsani (RO)
- Partenaires français : **Métropole Nice Côte d'Azur, Université Sophia-Antipolis, CSTB, EDF, Veolia, Côte d'Azur Habitat, Nexity, Vulog.**

Match-Up (13/15) : Maximising the upscaling & replication potential of high level urban transformation strategies

- Coordinateur : Espagne
- Villes pilotes : Valencia (ES), Dresde (DE), Antalya (TR)
- Villes suiveuses : Ostend (BE), Herzliya (IL), Kerava (FI)

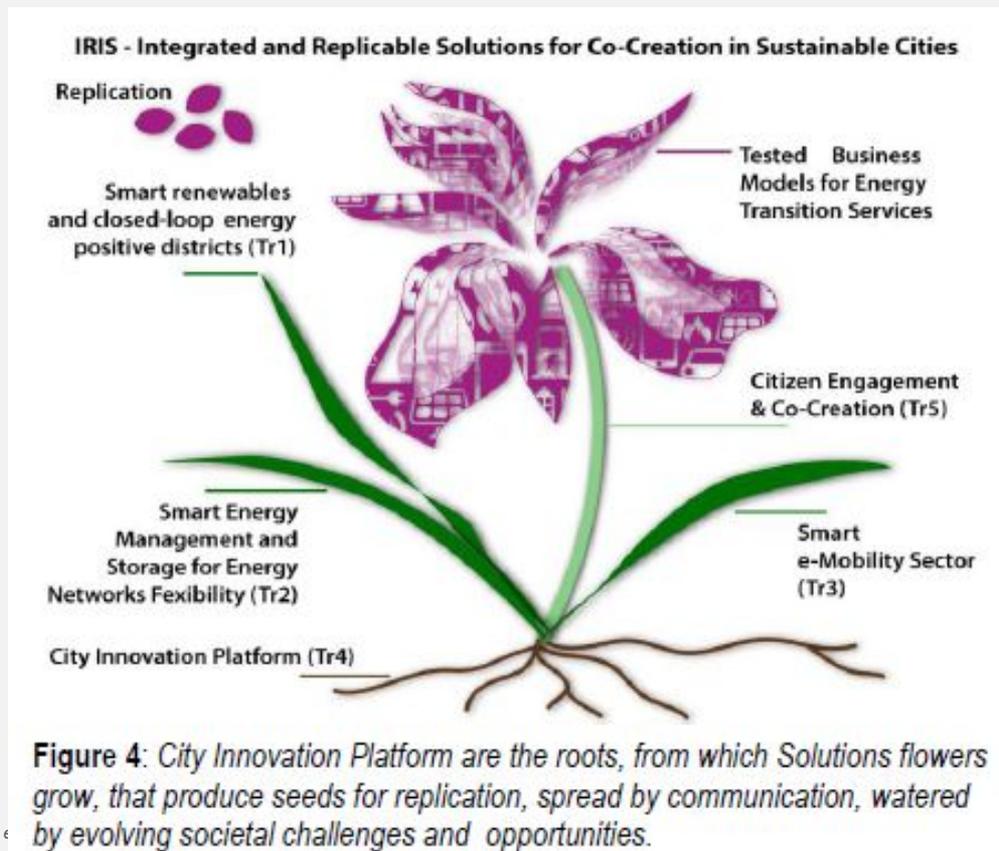
Stardust (10,5/15) : Holistic & Integrated urban model for S Cities

- Coordinateur : Espagne
- Villes pilotes : Pamplona (ES), Tampere (FI), Trento (IT)
- Villes suiveuses : Derry (UK), Kozani (EL), Litomerice (CZ)

Le projet IRIS - Principales caractéristiques

- 3 « villes phares » : Utrecht, Göteborg et Nice
- 4 « villes suiveuses » en Finlande, Grèce, Roumanie et Espagne
- 43 partenaires institutionnels, académiques et industriels en tout
- coordination par la ville d'Utrecht avec l'appui du Centre de recherche Grec le CERTH
- 18 millions d'€ de financement (taux de subvention de 70% à 100%)
- durée de 5 ans à partir du 01 octobre 2017
- Participants démonstrateur français :
 - *Métropole Nice Côte d'Azur (pilote démonstrateur niçois) : Direction des Financements Extérieurs, Centre d'Excellence, Agence de la Performance Energétique, Direction de la Mobilité*
 - *Partenaires académiques : Centre Scientifique et Technique du Bâtiment (CSTB) et Université de Nice (IMREDD et GREDEG)*
 - *Partenaires industriels : EDF, ENEDIS, VEOLIA*
 - *Autres partenaires : Côte d'Azur Habitat (CAH), NEXITY, VULOG*

Le projet IRIS - La vision



Le projet IRIS - Les solutions intégrées

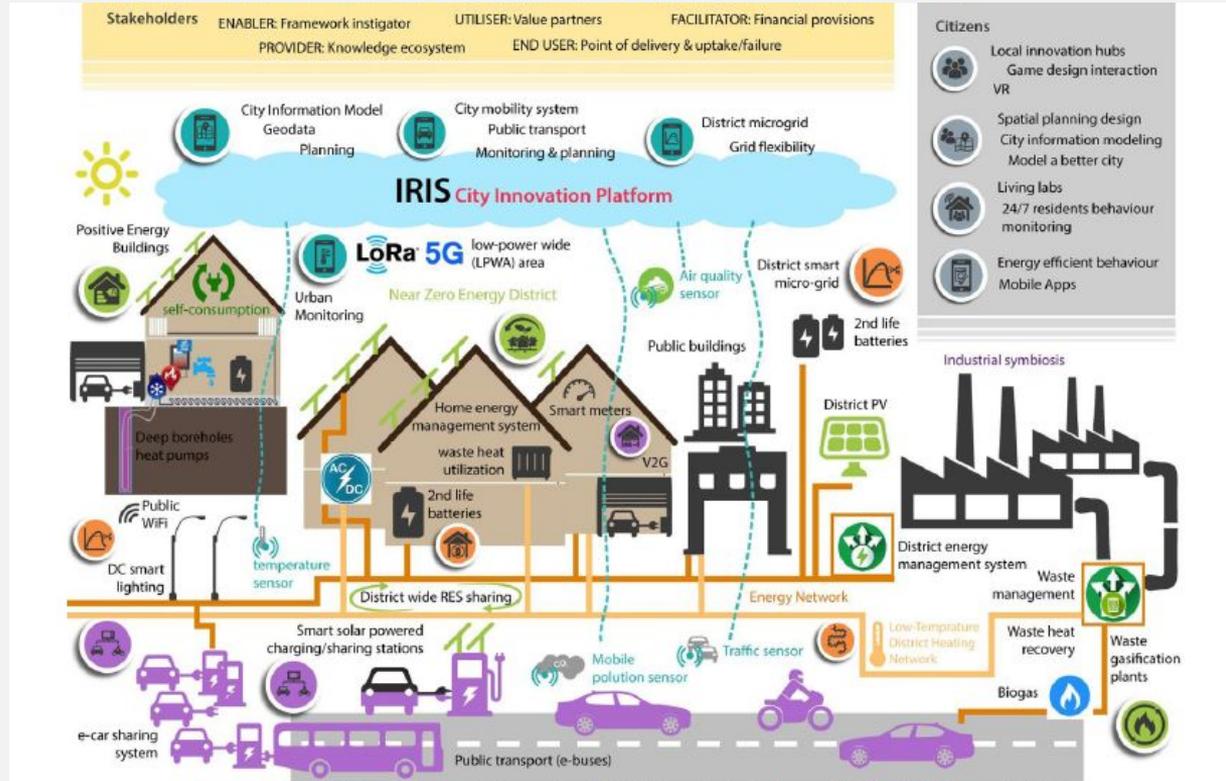


Figure 7: IRIS high-level conceptual mapping of IRIS integrated solutions within the Lighthouse districts



Le projet IRIS - Les solutions intégrées

Transition Track #1: Smart renewables and closed-loop energy positive districts		Transition Track #2: Smart Energy Management and Storage for Grid Flexibility		Transition Track #3: Smart e-Mobility Sector		Transition Track #4: City Innovation Platform (CIP) Use Cases		Transition Track #5: Citizen engagement and co-creation	
	Positive Energy Buildings		Flexible electricity grid networks		Smart Solar V2G EVs charging		Services for Urban Monitoring		Co-creating the energy transition in your everyday environment
	Near zero energy retrofit district		Smart multi-sourced low temperature district heating with innovative storage solutions				Services for City Management and Planning		Participatory city modelling
	Symbiotic waste heat networks		Utilizing 2nd life batteries for smart large scale storage schemes		Innovative Mobility Services for the Citizens		Services for Mobility		Living labs
							Services for Grid Flexibility		Apps and interfaces for energy efficient behaviour

Le projet IRIS - Les solutions intégrées

Transitions Tracks	Integrated Solutions	Lighthouse Cities						Follower Cities						
		Utrecht			Nice Cote d'Azur			Gothenburg			Vaasa	Alex	Tenerife	Focsani
#1 Smart renewables and closed-loop energy positive districts	IS-1.1: Positive Energy Buildings	-	-	R	-	D	R	P	D	R	R	R	R	-
	IS-1.2: Near zero energy retrofit district	P	D	R	P	D	R	P	D	R	R	R	R	R
	IS-1.3: Symbiotic waste heat networks	-	-	R	P	D	R	P	-	R	R	R	-	-
#2 Smart Energy Management and Storage for Energy Grid Flexibility	IS-2.1: Flexible electricity grid networks	-	D	R	P	D	R	-	D	R	R	-	-	-
	IS-2.2: Smart multi-sourced low temperature district heating with innovative storage solutions	P	-	R	P	D	R	P	D	R	R	R	-	R
	IS-2.3: Utilizing 2nd life batteries for smart large scale storage schemes	-	D	R	P	D	R	-	D	R	-	-	R	-
#3 Smart e-Mobility Sector	IS-3.1: Smart Solar V2G EVs charging	P	D	R	P	D	R	P	-	R	R	R	R	R
	IS-3.2: Innovative Mobility Services for the Citizens	P	D	R	P	D	R	P	D	R	R	R	R	R
#4 City Innovation Platform (CIP)	IS-4.1: Services for Urban Monitoring	P	D	R	P	D	R	P	-	R	R	R	R	R
	IS-4.2: Services for City Management and Planning	P	D	R	-	-	-	P	D	R	R	-	-	R
	IS-4.3: Services for Mobility	P	D	R	-	D	R	-	-	-	R	-	R	R
	IS-4.4: Services for Grid Flexibility	P	D	R	-	-	-	-	D	R	R	R	-	-
#5 Citizen engagement and Co-creation	IS-5.1: Co-creating the energy transition in your everyday environment	P	D	R	P	D	R	P	D	R	R	R	R	R
	IS-5.2: Participatory city modelling	P	D	R	P	D	R	P	D	R	R	-	-	-
	IS-5.3: Living labs	-	D	R	-	-	-	P	D	R	R	-	-	-
	IS-5.4: Apps and interfaces for energy efficient behaviour	P	D	R	P	D	R	-	D	R	R	R	R	R

Table 10: IRIS Integrated Solutions Matrix presenting:

- (a) the knowledge transfer from Lighthouse cities that already have a Pre-Pilot area where the solution has already been tested (letter: P),
 (b) the Lighthouse cities where each of the IRIS solution will be demonstrated during the course of the project and
 (c) the initial planning for replication of the solutions in both the Lighthouse and Follower cities (letter: R)

Le projet IRIS - Partage de connaissance et déploiement

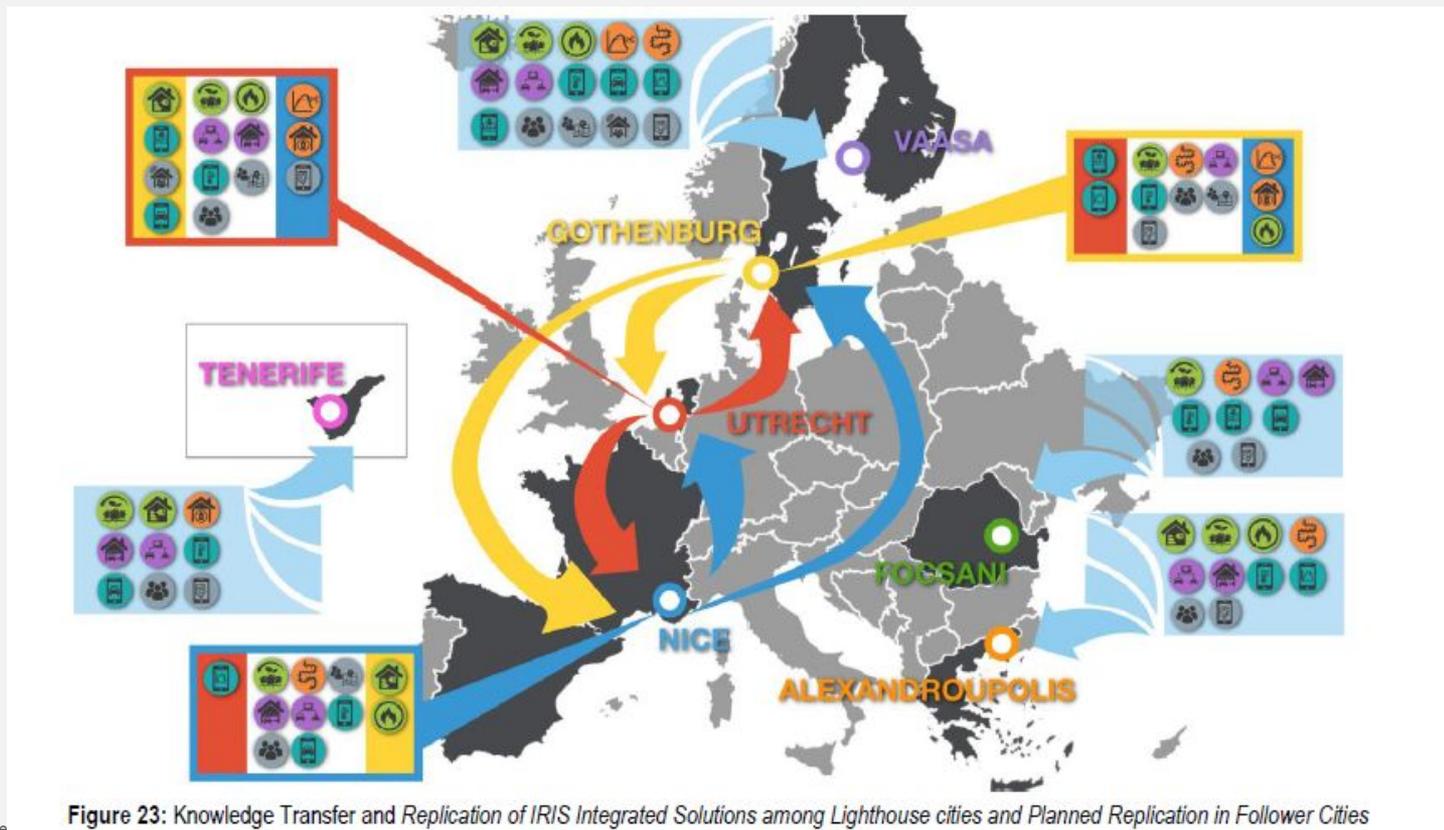


Figure 23: Knowledge Transfer and Replication of IRIS Integrated Solutions among Lighthouse cities and Planned Replication in Follower Cities

Le projet H2020 IRIS - Organisation et management

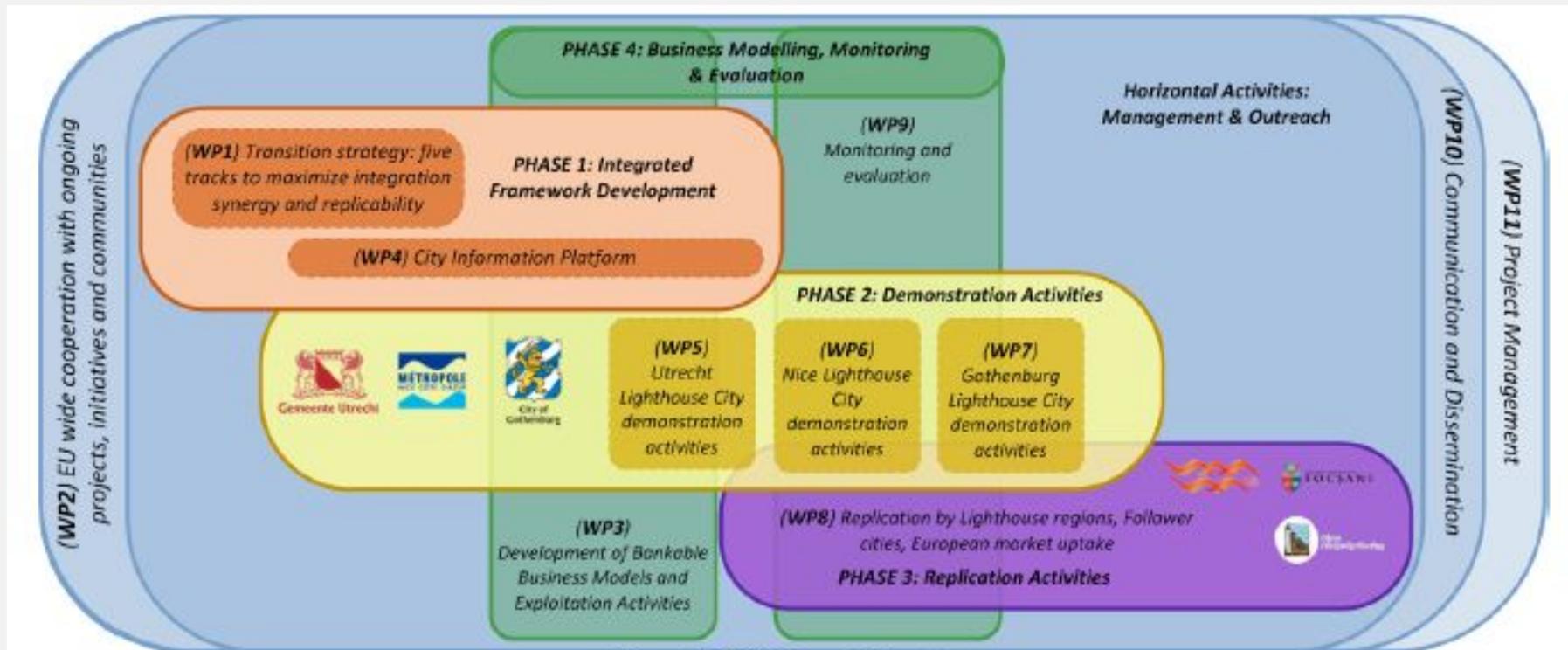


Figure 54: IRIS Overall Structure

Le projet IRIS - Le démonstrateur niçois

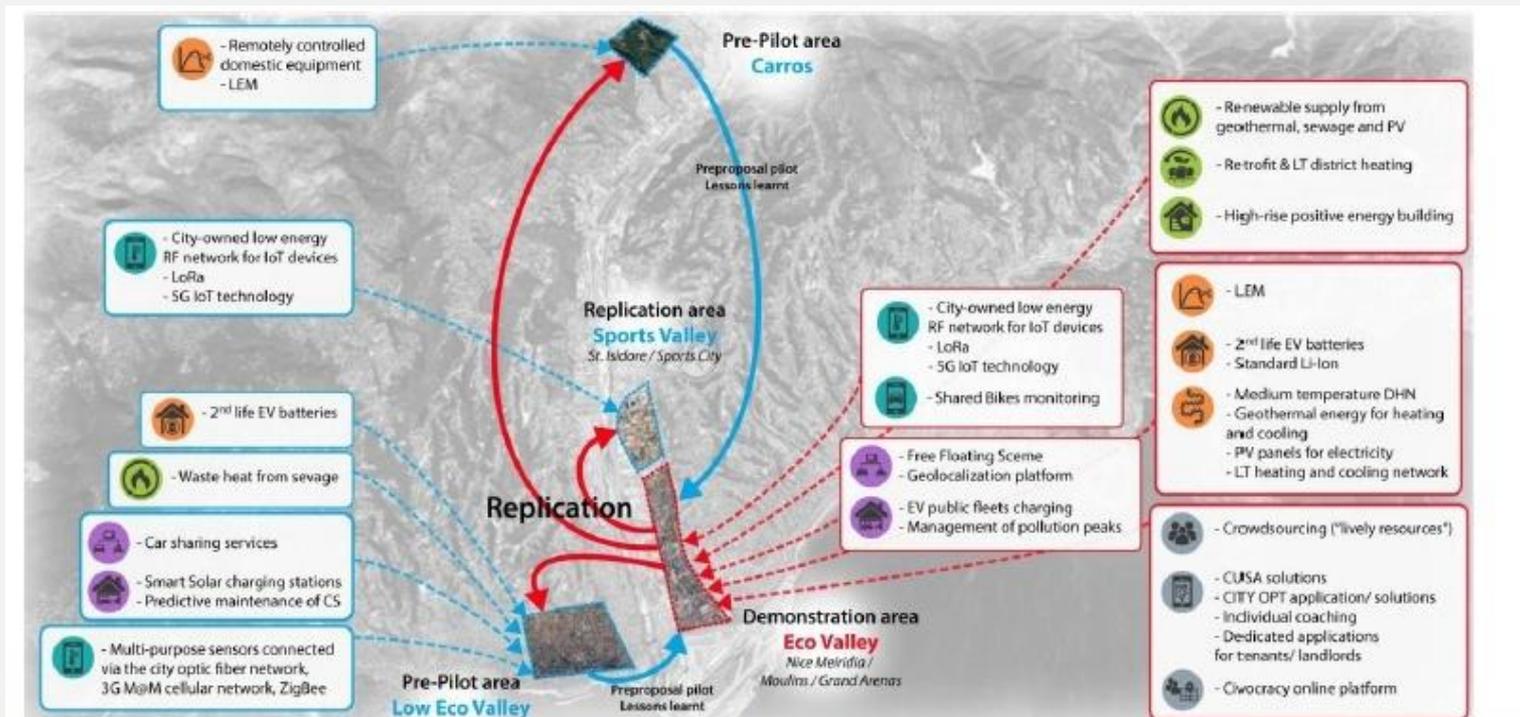


Figure 17: The NCA lighthouse approach: individual solutions tested small-scale in pre-proposal pilots in Carros and Low Eco Valley and jointly demonstrated in the lighthouse district of Eco Valley, to be replicated in the and Low Eco Valley and Sports Valley areas and region of Nice during and after the lighthouse project.

Le projet IRIS - Le démonstrateur niçois

Task	Content	Schedule (mois)	Task Leader
T6.1	Elaborating baseline, ambition and barriers for Nice lighthouse interventions	M1-M12	Université CA
T6.2	Coordination of Nice integration and demonstration activities	M1-M60	NCA
T6.3	Demonstrating Transition Track #1: Smart renewables and near zero energy district	M7-M60	CSTB
T6.4	Demonstrating Transition Track #2: Smart energy management and storage for flexibility	M13-M60	EDF
T6.5	Demonstrating Transition Track #3: smart e-mobility	M13-M60	VULOG
T6.6	Demonstrating Transition Track #4: City Innovation Platform (CIP) and information services	M13-M60	NCA
T6.7	Demonstrating Transition Track #5: Citizen engagement and motivating feedback	M13-M60	VEOLIA

◦ M1 : octobre 2017

Le projet IRIS - Participation de Veolia au démonstrateur niçois

Task Leader T6.7 (Citizen engagement and motivating feedback) incluant :

- démonstrateur AMCI (Citizen Utilities Savings through Awareness)
- démonstrateur CITYOPT (Métropole NCA / ENEDIS)
- démonstrateur Civocracy

Coordination de trois pilotes

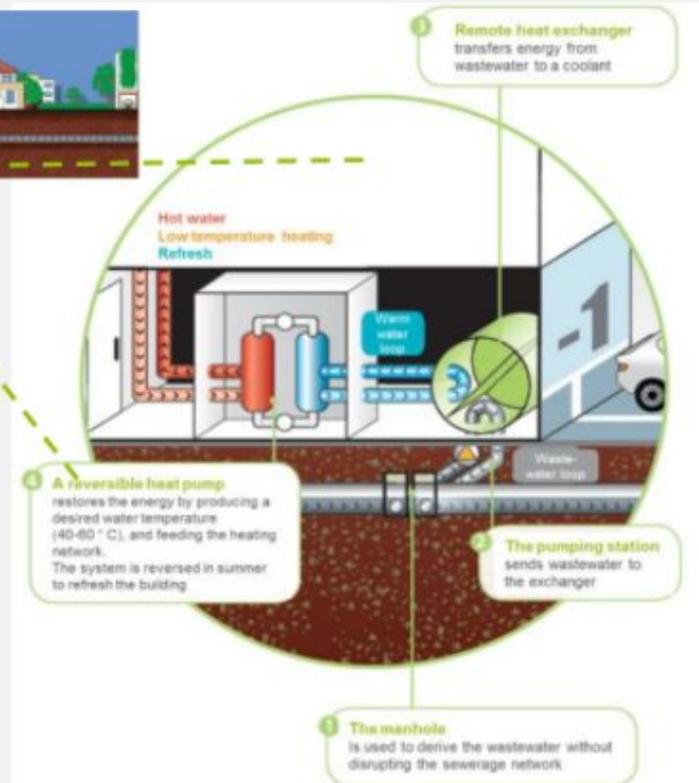
- Pilote Veolia n°1 : optimisation loi de chauffe □ T6.3
 - objectif : réduction de 10% des pertes de chaleur
- Pilote Veolia n°2 : accompagnement à la maîtrise des consommations individuelles d'utilités
 - objectif : réduction de 10% des charges des locataires et temps de retour de 2/3 ans pour le bailleur
- Pilote Veolia n°3 : réduction des pics de pollution
 - Objectif : réduction des émissions de SO₂, PM_{2.5} et PM₁₀



Le projet ReUseHeat - Valorisation énergétique des eaux usées



Energido, an Innovative solution built by Veolia, recovers waste water's calories on networks or sewage stations, and thereby allows the recovery of wastewater into energy and heat power where it is available and usable.



Le projet ReUseHeat - Valorisation énergétique des eaux usées



Energido implementation in ROQUEBRUNE-CAP-MARTIN:

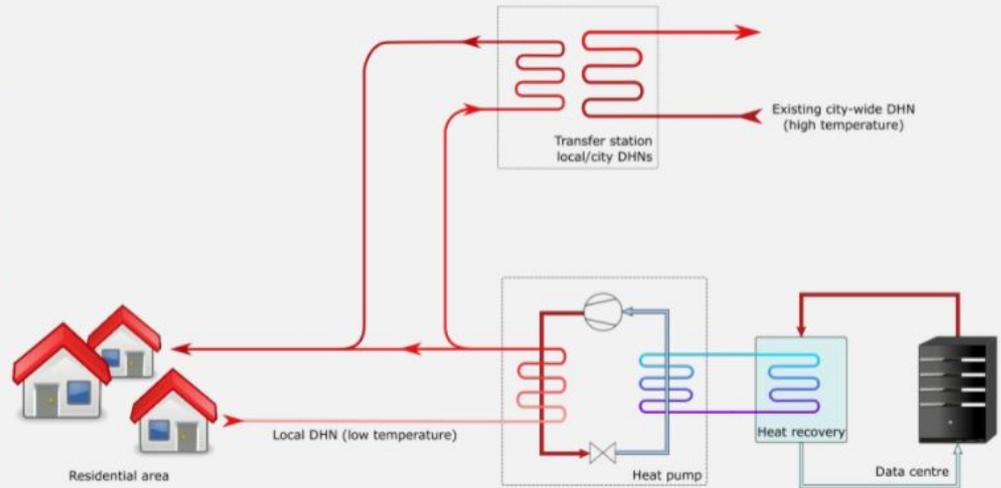
- Eco district of 18,700 m² - CAP-AZUR
- Project manager Bouygues Immobilier
- 279 apartments including a tourist residence with swimming pool
- 700 m² tertiary center
- A nursery
- 800 kW installed to ensure 1200 MWh / year of heating / cooling and domestic hot water needs



Le projet ReUseHeat - Valorisation de la chaleur des data center

Datacenter heat recovery in Brunswick to local District Heating Network :

- Project Reuseheat H2020, it demonstrated an innovative system in Germany (Brunswick) for the recovery and reuse of waste heat from data centre enabling heat recovery.
- This heat is delivered through a new low temperature DHN covering the base load demand of new residential building area.
- A smart and flexible control strategy, based on the supply temperature requirements, enables the direct supply to the end-users of the heat produced by the new system.



Le projet ReUseHeat - Valorisation de la chaleur des data center

Datacenter heat recovery in Brunswick to local DHN:

- Total heat demand: 2,100 MWh/year
- Supply via the heat pump: 1,750 MWh/year (Electricity consumption 580 MWh)
- Primary energy savings: 1,284 MWh/year
- CO2 emissions savings: 304 t CO2/year
- Heat pump with a thermal output from 300 to 600 kW (COP 3.6) + connection to the city district heating network
- CAPEX: 460,000 € (network investments not part of the ReUseHeat scope)
- OPEX: 104,000 €/year
- Global District Energy Climate Award 2019

