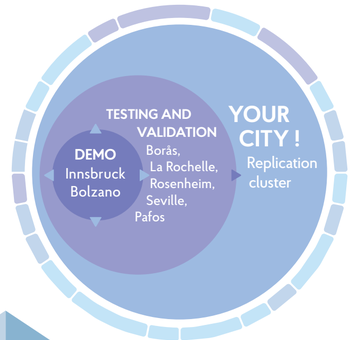
From demonstration to replication

The SINFONIA cities are making their expertise available to others through the "Replication Cluster", a joint initiative of the EU-GUGLE (www.eu-gugle.eu) and SINFONIA projects that aims to share the experiences of eight demonstration cities and seven "early adopter cities". Together, they offer peer to peer support to other cities and communities interested in implementing their own district-scale refurbishment strategies towards greater energy efficiency.



How to get your city involved? Join the REPLICATION CLUSTER!

By joining the Replication Cluster, your city will join a community of like-minded cities interested in integrated refurbishment solutions for districts, and access a series of knowledge exchange activities with other cities facing the same challenges as yours, such as field visits, thematic workshops or peer review of master plans. To join the Replication Cluster, please visit www.sinfonia-smartcities.eu/en/replication

Join the community

My Smart City District group
@MySmartCityD
www.sinfonia-smartcities.eu/en/replication

Consortium

Pilot district Innsbruck

City of Innsbruck	(AT)
Innsbrucker Kommunalbetriebe AG	(AT)
ATB-Becker e.U.	(AT)
E3 Consult	(AT)
Neue Heimat Tirol	(AT)
University of Innsbruck	(AT)
alpS	(AT)
Standortagentur Tirol	(AT)
Innsbrucker Immobilien Gesellschaft	(AT)
Tigas-Erdgas Tirol	(AT)
TIWAG-Tiroler Wasserkraft AG	(AT)

Pilot district Bolzano

City of Bolzano/Bozen	(IT)
European Academy Bozen/Bolzano (EURAC)	(IT)
Istituto per l'Edilizia Sociale (IPES)	(IT)
Alperia	(IT)
Agency for Energy South Tyrol - CasaClima	(IT)
IDM Südtirol / Alto Adige	(IT)

European partners

RISE Research Institutes of Sweden	(SE)
Atlantis Consulting	(CY)
Centre Scientifique et Technique du Bâtiment (CSTB)	(FR)
Greenovate ! Europe	(BE)
Michael Heidenreich Consulting	(AT)
Passive House Institute (PHI)	(DE)
TECHNOFI	(FR)
Urban Software Institute (ui!)	(DE)
Zabala Innovation Consulting	(ES)

Early Adopters

La Rochelle	(FR)
Rosenheim	(DE)
Pafos	(CY)
Seville	(ES)
Borås	(SE)

SINFONIA stands for "Smart INitiative of cities Fully cOmmitted to iNvest In Advanced large-scaled energy solutions" and is funded under the 7th Framework Programme for Research and Technological Innovation.

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Sinfonia

Low Carbon cities for better living

Large scale, integrated and scalable energy solutions for European districts

SINFONIA. Low carbon cities for better living

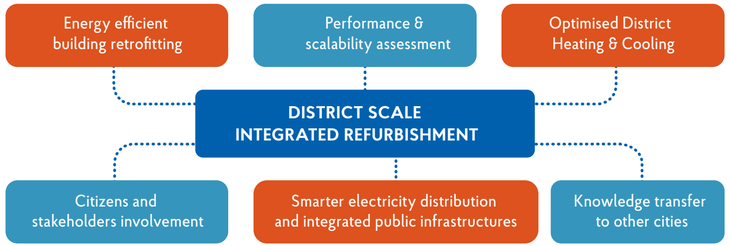
With 80% of European citizens living in urban areas, cities have a crucial role to play in the transition towards a low-carbon economy. Faced with the challenge of ensuring the quality of life of their citizens while becoming more energy efficient, cities must look at the system level and develop integrated urban development strategies that will make them both sustainable and better places to live.

Bolzano and Innsbruck paving the way to smarter cities

The SINFONIA project is a five-year initiative to deploy large-scale, integrated and scalable energy solutions in middle-sized European cities. At the heart of the initiative is a unique cooperation between the cities of **Bolzano** and **Innsbruck**, working hand in hand to achieve 40 to 50% primary energy savings and increase the share of renewables by 20% in two pioneer districts. This will be done through an integrated set of measures combining the retrofitting of more than 100,000m² of living surface, optimisation of the electricity grid, and solutions for district heating and cooling.

Bridging the gap between demonstration and large-scale replication

A large part of the project is therefore dedicated to the transferability and scalability of the solutions deployed in the two pioneer districts. To achieve this, SINFONIA will define a limited set of district typologies and corresponding refurbishment models, enabling cities to easily assess their needs and efficiently define their long-term refurbishment strategies. Their scalability and transferability, these models and typologies will be tested and validated with all stakeholders involved – public and private, from citizen to energy regulators - not only in **Innsbruck and Bolzano**, but also in five 'early adopter' cities actively participating in SINFONIA: **La Rochelle** (FR), **Rosenheim** (DE), **Pafos** (CY), **Seville** (ES) and **Borås** (SE).

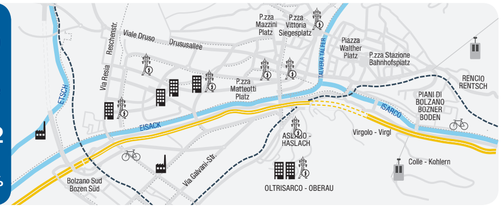


Bolzano

CONTACT: sinfonia@eurac.edu

Since 2005, Bolzano (100,000 inhabitants) has developed an ambitious investment plan for large scale urban refurbishment in collaboration with both public and private stakeholders. The work undertaken in SINFONIA is part of this plan, and aims to achieve 40% to 50% primary energy savings in the demo sites and to increase the share of renewables in the district of Bolzano SW (South West) by 20%.

- **Citizens living in refurbished area** 15,000
- **Total refurbished area** 37,000m²
- **Dwellings retrofitted** 422
- **Estimated Energy Savings** 40-50%



BUILDING REFURBISHMENT

37,000m² of social housing buildings from the 50s-90s will be retrofitted to achieve high energy performance and **improve interior comfort** while ensuring cost effectiveness and minimal impact on tenants.

MEASURES INCLUDE:

- Building envelope insulation (insulation, change of windows, elimination of thermal bridges);
- Ventilation system with highly efficient heat recovery;
- Integration of renewable energy sources for electricity, heating and domestic hot waterSolar PV panels;
- Additional storeys using innovative timber construction technologies

DISTRICT HEATING

The district heating network will be extended and optimised to reduce the CO_2 equivalent emissions and the nitrogen oxides emissions.

MEASURES INCLUDE:

- Real time monitoring and forecasting of peak loads and energy demand;
- Hybrid hydrogen/methane backup system;
- Feasibility study for recovery of wasted energy in the local industrial park.

ELECTRICITY GRID

Bolzano will implement an Urban Service-Oriented Sensible Grid (USOS-grid) system in the South West district for improved energy distribution control.

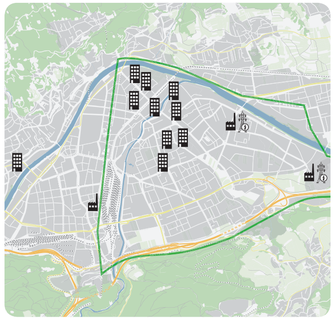
MEASURES INCLUDE:

- Recharge points for vehicles and bicycles;
- Meteorological stations for local climate condition monitoring;
- Smart retrofitting of the public lighting system.

Innsbruck

CONTACT: sinfonia@standort-tirol.at

Innsbruck (120,000 inhabitants) defined its 2025 Energy Plan back in 2009. In this context, and as part of SINFONIA, the city has selected its eastern part of the city to demonstrate the large scale implementation of energy efficient measures, with the objective of achieving on average 40 - 50% primary energy savings in the demo sites and to increase at least by 30% the share of renewables in the city's energy mix.



- **Citizens living in refurbished area** +40,000
- **Total refurbished area** 66,000m²
- **Dwellings retrofitted** 670
- **Estimated Energy Savings** 50%

BUILDING REFURBISHMENT

66,000m² of residential and public buildings from the 30s-80s will be retrofitted to dramatically improve indoor quality and energetic performance, and reduce final energy demand by up to 80%.

MEASURES INCLUDE:

- Improved envelope (insulation, windows, thermal bridges, etc.);
- Ventilation system with high efficiency heat recovery;
- Integration of renewable energy sources on-site (PV, solarthermal, heatpumps).

DISTRICT HEATING & COOLING

The district heating network will be extended and optimised to significantly increase the use of renewable energy sources.

MEASURES INCLUDE:

- Deployment of a hybrid grid;
- Intelligent use of waste heat and wastewater;
- Integration of innovative wood gasification solutions.

ELECTRICITY GRID

Smart Grids und Smart Home applications will combine demand and supply side measures to reduce the overall electricity demand by 3%. Buildings will be transformed to Smart Urban Model (SUM) houses.

MEASURES INCLUDE:

- Smart load shifting for freezers, water boilers and heat pumps;
- Establishment of a hybrid network;
- Automation of the electric grid at 10kv;
- Combine photovoltaic system and batteries for energy storage.