



**Peristeri
Municipality**



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Peristeri Municipality

- Development of adaptation strategy
- Implementation of selected adaptation measure



LIFE 2015 Climate Change Adaptation : LIFE15 CCA/CY/000086

Peristeri Municipality - Location



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Περιφέρεια Αττικής
Δήμος Περιστερίου



Peristeri Municipality - Location



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Peristeri Municipality - Description



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The city is expanded in an area over 10 Km²

Population of 140,000 people (official census 2011)

Density of 14,000 habitants/Km²

(Electrical Power Company's statistical survey estimates 60,519 houses and a population over 300,000)

8th largest municipality of Greece in population

Extended traffic and transportation coverage (10 bus lines, 2 trolley lines and 3 metro stations)



Peristeri Municipality - Description



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Municipality holds 9 directions responsible for the maintenance of :

- 61 Nurseries / Kindergartens
- 86 school buildings
- over 100 squares / small parks
- over 400 Km of street lighting - pedestrian streets
- Exhibition Center
- 4 Municipal Theatres – Cinemas
- 8 football grounds - 2 basketball arenas
- 6 school sports complexes
- 2 open tennis courts complexes
- 2 Municipal Swimming Pools
- Cultural Centers



Peristeri adaptation strategies



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Using the UrbanProof ToolKit, National Technical University and National Observatory of Athens developed the adaptation plan for Peristeri Municipality

CHAPTER 1: Analysis of Impact and Adaptation Assessment methodology

CHAPTER 2: Historical climate data trends & future climate change forecasts

CHAPTER 3: Associated impacts and vulnerabilities Assessment

CHAPTER 4: Adaptation Assessment

CHAPTER 5: Monitoring plan



Peristeri adaptation strategies



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The suggested adaptation measures focused on :

- Water availability
- Floods
- Electricity demand for cooling
- Heatwaves and health
- Ozone exceedances
- Peri-urban fires

21 measures adopted  36 actions



Peristeri adaptation strategies



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The adaptation actions were analyzed through the multi-criteria evaluation process provided by the toolkit.

For each proposed action is identified:

- (i) the responsible department(s) for its implementation
- (ii) the implementation timeline
- (iii) the possible funding sources
- (iv) the relative objectives, indicators of progress and targets
- (v) the integration of adaptation actions into the local development plans and policies



Peristeri adaptation strategies



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Negotiation Stages :

- Stakeholders – Adaptation measures evaluation
- Internal negotiation with the responsible services
- Public negotiation with public and private bodies
- Public negotiation with the citizens
- Internal negotiation with the political leadership

The adaptation strategies are directly linked to the Operational plan 2021-2025



Peristeri adaptation strategies

Water availability



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Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Water saving appliances for buildings	4.1	4.3	2.4	2.7	3.4
Rain gardens	3.1	4.1	2.7	2.3	3.1
Greywater re-use (domestic)	3.4	3.9	3.1	1.6	3.0
Water metering systems	3.3	4.0	2.6	1.9	2.9
Infiltration / Detention basins	3.3	3.7	2.5	2.1	2.9
Rehabilitation of water distribution network	3.3	3.5	2.5	2.5	2.9
Rainwater harvesting at buildings	3.0	3.9	2.8	1.7	2.8
Wastewater treatment plants	3.5	3.4	1.7	2.7	2.8
Riverbed material restoration / re-naturalization	2.9	4.0	1.9	2.4	2.8
Permeable paving	2.8	3.6	2.6	2.1	2.8
Infiltration trenches and Swales	3.1	3.6	2.2	2.2	2.8
Artificial groundwater recharge through wells	2.8	3.3	2.9	1.7	2.7
Soakaways	3.1	3.3	2.2	2.1	2.7



Peristeri adaptation strategies

Water availability



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Peristeri adaptation strategies

Floods



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Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Trees in urban areas	3.3	4.6	3.3	2.0	3.3
Retention ponds	4.1	3.6	1.8	2.8	3.1
Forest riparian buffers	3.3	4.5	2.3	2.0	3.1
Riverbed material restoration and re-naturalization	3.8	3.9	1.5	2.9	3.0
Rain water channels	3.4	3.6	1.8	3.0	2.9
Filter strips	3.2	3.8	2.3	2.4	2.9
Green Roofs	3.1	4.0	1.6	2.9	2.9
Permeable paving	3.4	3.3	2.2	2.6	2.9
Infiltration trenches and Swales	3.7	3.3	2.3	2.2	2.9
Rain gardens	3.3	3.6	2.5	2.1	2.8
Infiltration / Detention basins	3.8	3.2	1.8	2.3	2.8
Sediment capture ponds	3.5	3.2	2.3	2.0	2.7



Peristeri adaptation strategies

Floods



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Peristeri adaptation strategies



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Electricity demand for cooling

Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Financial incentives for the Holistic Energy Efficient Retrofitting of Municipality Buildings	3.9	4.2	2.2	3.3	3.4
Economic incentives for renewable and energy efficiency	4.1	4.2	1.9	3.1	3.3
Renovation of municipality buildings to Nearly Zero-Energy Buildings	4.0	4.1	1.7	3.3	3.3
Demonstration projects and educational programs	3.5	4.0	3.3	2.0	3.2
Urban forest	3.4	4.2	2.9	2.0	3.1
Cool Roofs	3.3	3.5	2.5	2.7	3.0
Economic incentives to reduce urban heat island	3.3	3.6	1.8	2.7	2.9
Green roofs	3.1	3.8	2.0	2.6	2.9
Cool pavements	3.1	3.5	2.0	2.8	2.9



Peristeri adaptation strategies



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Peristeri adaptation strategies

Heatwaves and health



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Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Urban parks	4.1	4.6	2.9	2.0	3.4
Raising public awareness	4.1	4.0	3.4	1.6	3.3
Early warning systems	4.2	4.0	3.1	1.5	3.2
Water pollution monitoring	4.0	4.2	2.6	1.9	3.2
Pavements redesign	3.5	3.7	2.1	2.9	3.1
Strict controls/health inspections in food industry	3.6	3.2	2.9	2.0	2.9
Strategies for public buildings restoration	3.7	3.7	1.9	2.4	2.9
Limitation of outdoor activities	2.9	2.7	3.3	0.4	2.3
Air-conditioned public buildings	3.4	1.8	1.8	1.9	2.2



Peristeri adaptation strategies



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Heatwaves and health

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Peristeri adaptation strategies

Ozone exceedances



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Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Choose a cleaner commute — car pool, or public transportation	3.5	3.8	3.0	1.3	2.9
Monitoring of air quality	3.4	4.3	2.0	1.9	2.9
Enhance public awareness and education	3.7	3.7	3.0	1.2	2.9
String inspections in service industries. Facilities should use best pollution abatement technologies available	3.3	4.0	2.1	2.1	2.9
Implementation of measures for air quality improvement in urban areas	3.5	3.5	2.6	1.7	2.8
Conserve electricity and set air condition at a higher temperature	3.1	3.7	3.9	0.3	2.8
Collection of air quality data and completion of inventory	3.2	3.3	2.7	1.8	2.7
Changes in driving habits (refuel cars and trucks after dusk, combine errands and reduce trips, limit engine idling)	2.8	3.1	4.0	0.4	2.6



Peristeri adaptation strategies

Ozone exceedances



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Peristeri adaptation strategies

Peri-Urban fires



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Adaptation measures	Criteria				Total score
	Efficiency in addressing the impact	Environmental Friendliness	Economic Viability	Job growth	
Reforestation / rehabilitation actions of the areas affected by the fire	4.0	4.5	2.5	2.3	3.3
Establishment of an early warning system for forest fire	3.9	4.4	2.8	1.8	3.2
Limiting the abandonment of burned areas	3.4	4.1	3.0	2.1	3.2
Awareness campaigns to change citizens' behavior	3.6	4.0	2.9	1.9	3.1
Strengthening firefighting measures	3.6	4.0	2.3	2.2	3.0
Strengthen infrastructure to improve protection and prevention against forest fires	3.6	3.7	2.5	2.2	3.0



Peristeri adaptation strategies

Peri-Urban fires



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Peristeri adaptation strategies



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Selected measures

	Adaptation measure	Cleaner car pool and public transportation	
1	Content	Elaboration plan for Installation of public Electric Vehicle Charging Stations	
2	Responsible Service	Working Group	
3	Timetable	Estimated start (month / year)	Estimated completion (month / year)
		1/2022	12/2023
4	Possible Funding Source	Green Fund	
5	Progress Indicators & Target Price	Index	Target Price
		<i>Number of stations</i>	140
6	Integration of the measure in local development plan	Integration in the Annual and Operational Plan of the Municipality Relevant credit is foreseen in 2021-2022 budget	




Peristeri adaptation strategies



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Selected measures

	Adaptation measure	Cleaner car pool and public transportation	
1	Content	Supply of electric buses of public transport and electric vehicles for the needs of the municipality.	
2	Responsible Service	Department of Environment & Quality of Life	
3	Timetable	Estimated start (month / year)	Estimated completion (month / year)
		1/2022	12/2023
4	Possible Funding Source	"Antonis Tritsis" funding program	
5	Progress Indicators & Target Price	Index	Target Price
		<i>Number of electric buses</i>	5
		<i>Number of electric vans</i>	10
		<i>Number of electric suvs</i>	3
		<i>Number of electric mini-vans</i>	5
6	Integration of the measure in local development plan	Integration in the Annual and Operational Plan of the Municipality Relevant credit is foreseen in 2021-2022 budget	

Implementation of selected adaptation measure



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Mapping of the Urban Heat Island in Peristeri

The toolkit is equipped with real time data from a network of 12 recording stations:

- One recording station at City Hall in the main square of Peristeri
- One mobile recording station on the municipal bus that cross all over Peristeri, using mobile internet
- 10 recording stations near to the ground, using on line data storage



Implementation of selected adaptation measure



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Red spots : UrbanProof stations near to the ground

Blue line : Municipal Bus

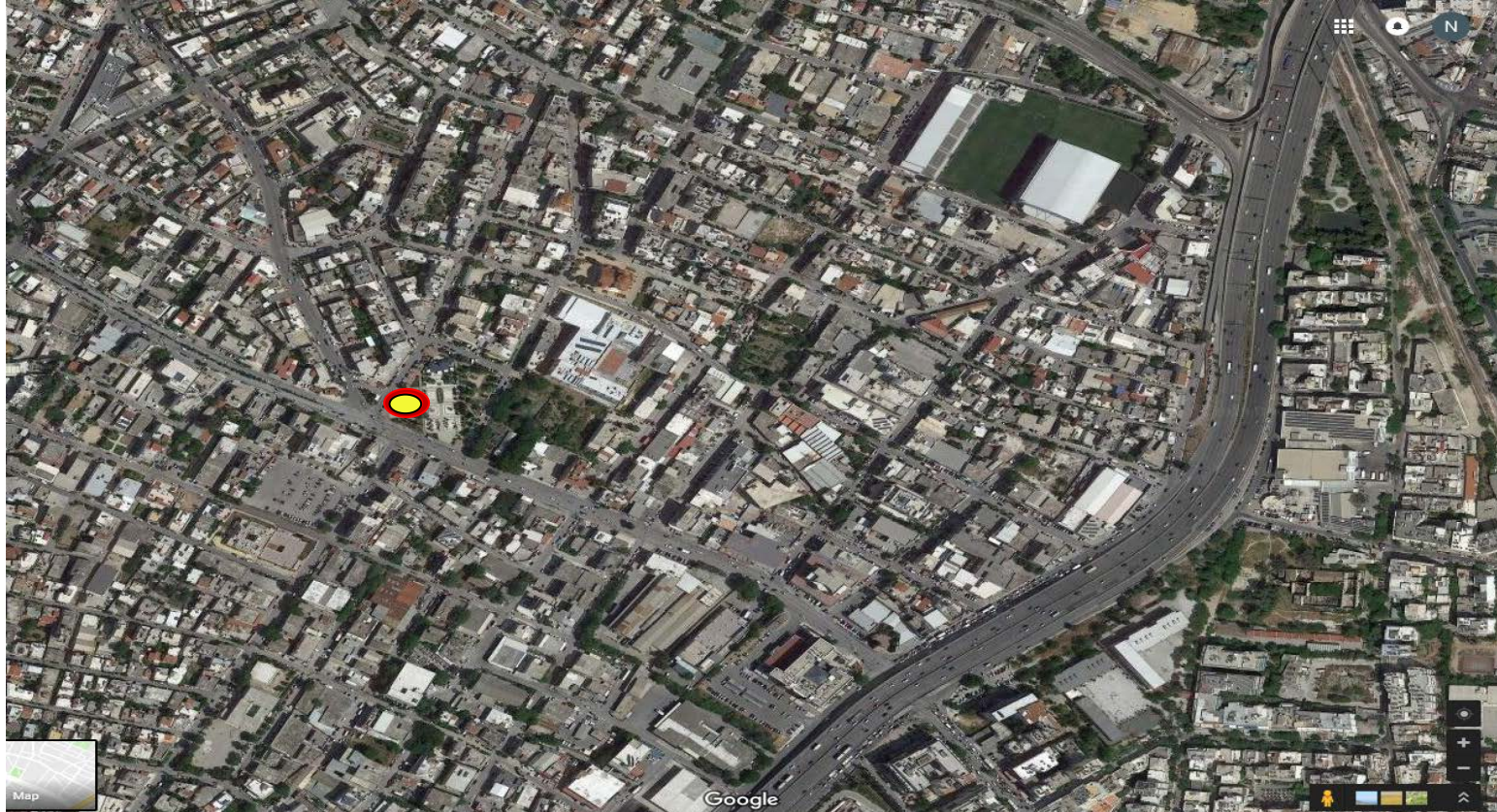
Yellow spots : Existed stations (Ministry of Environment – Peristeri Municipality)



Implementation of selected adaptation measure



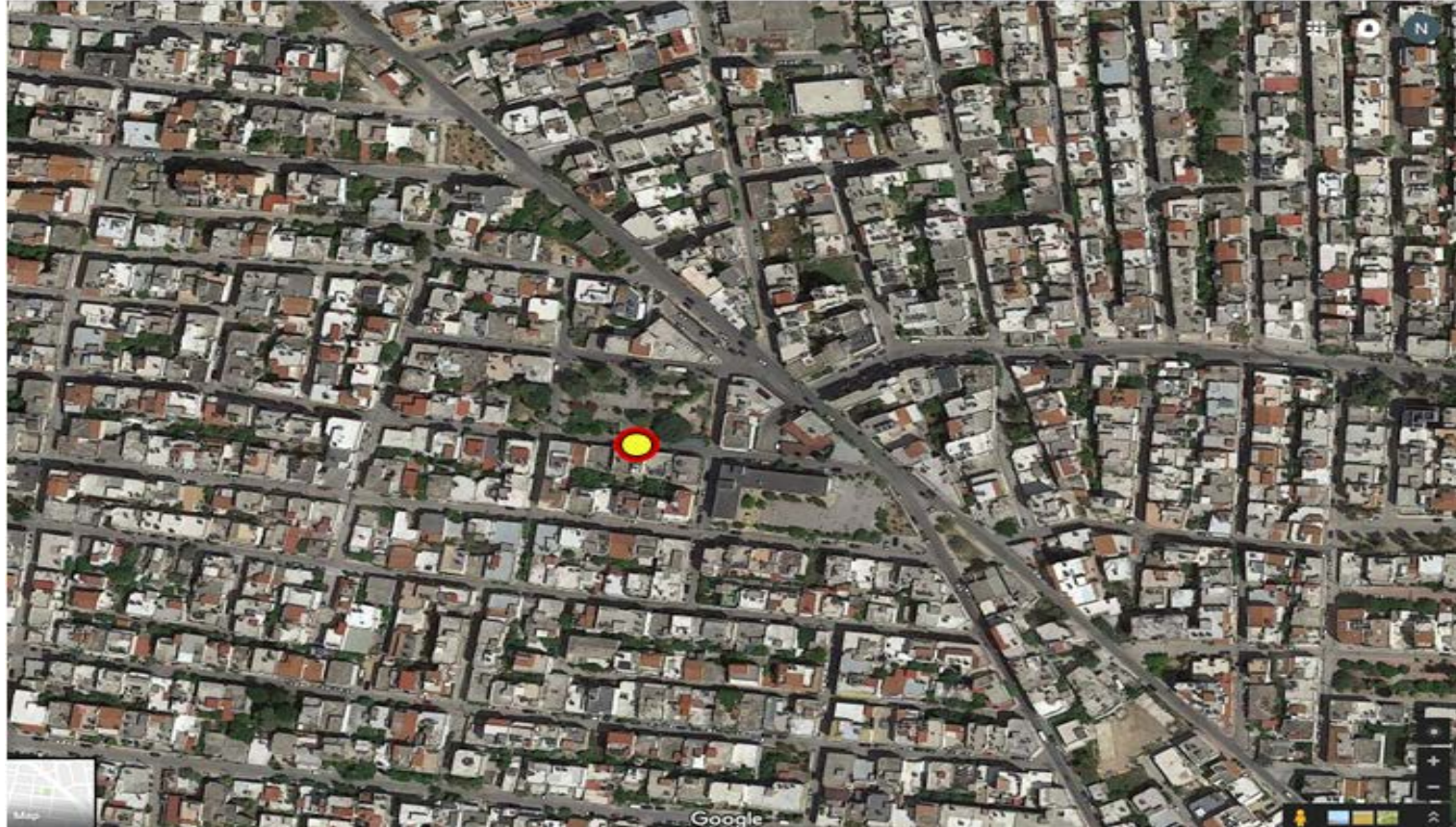
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Implementation of selected adaptation measure



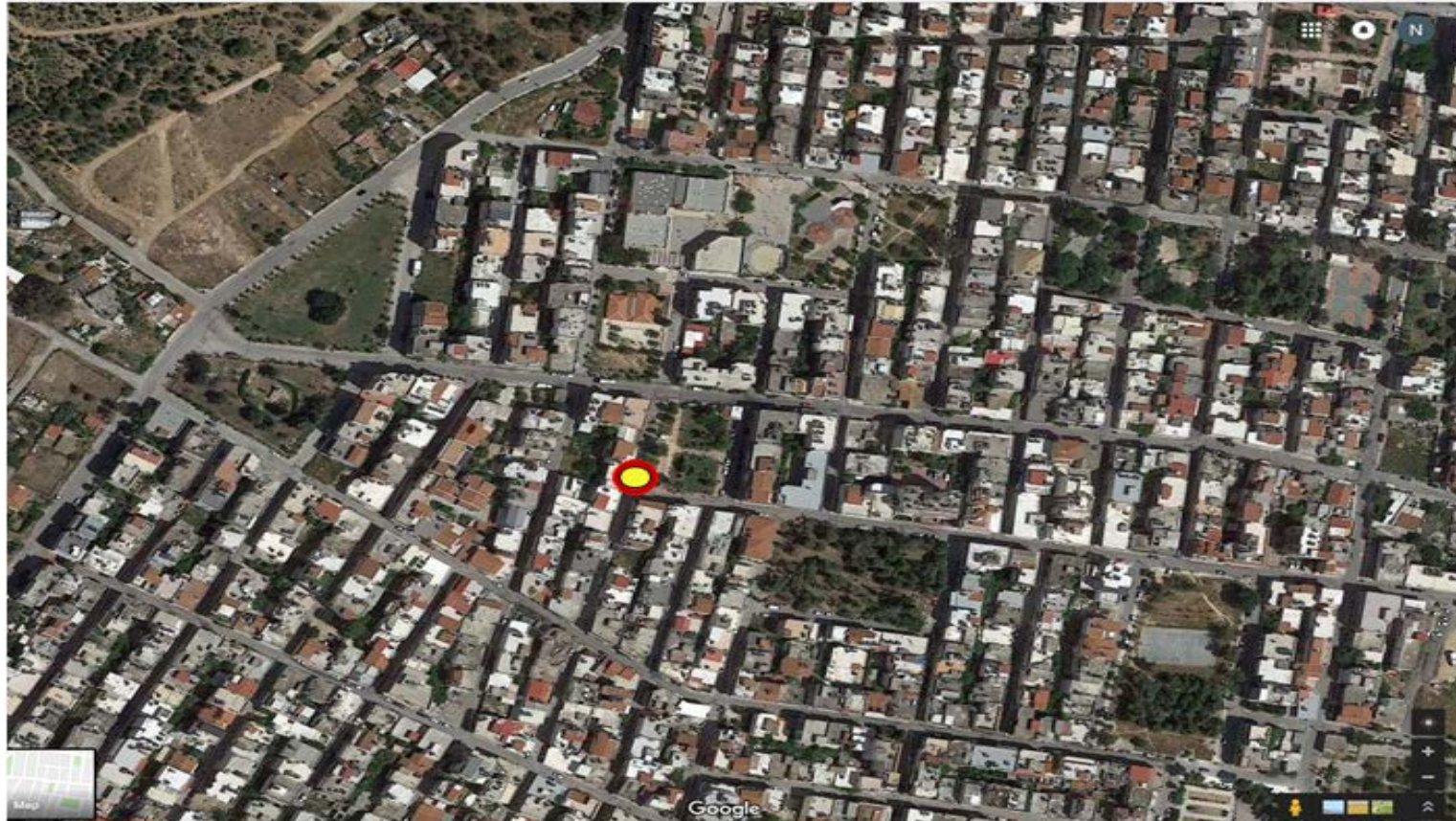
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Implementation of selected adaptation measure



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Implementation of selected adaptation measure



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Implementation of selected adaptation measure



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Implementation of selected adaptation measure



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The above network is supported by real time data transmission and data storage software to a central computer

The central computer that hosts the network database is connected to an electronic billboard for public information

Real time data from all the stations

High temperatures during summer / air conditioned public buildings

High rain drops / flood danger

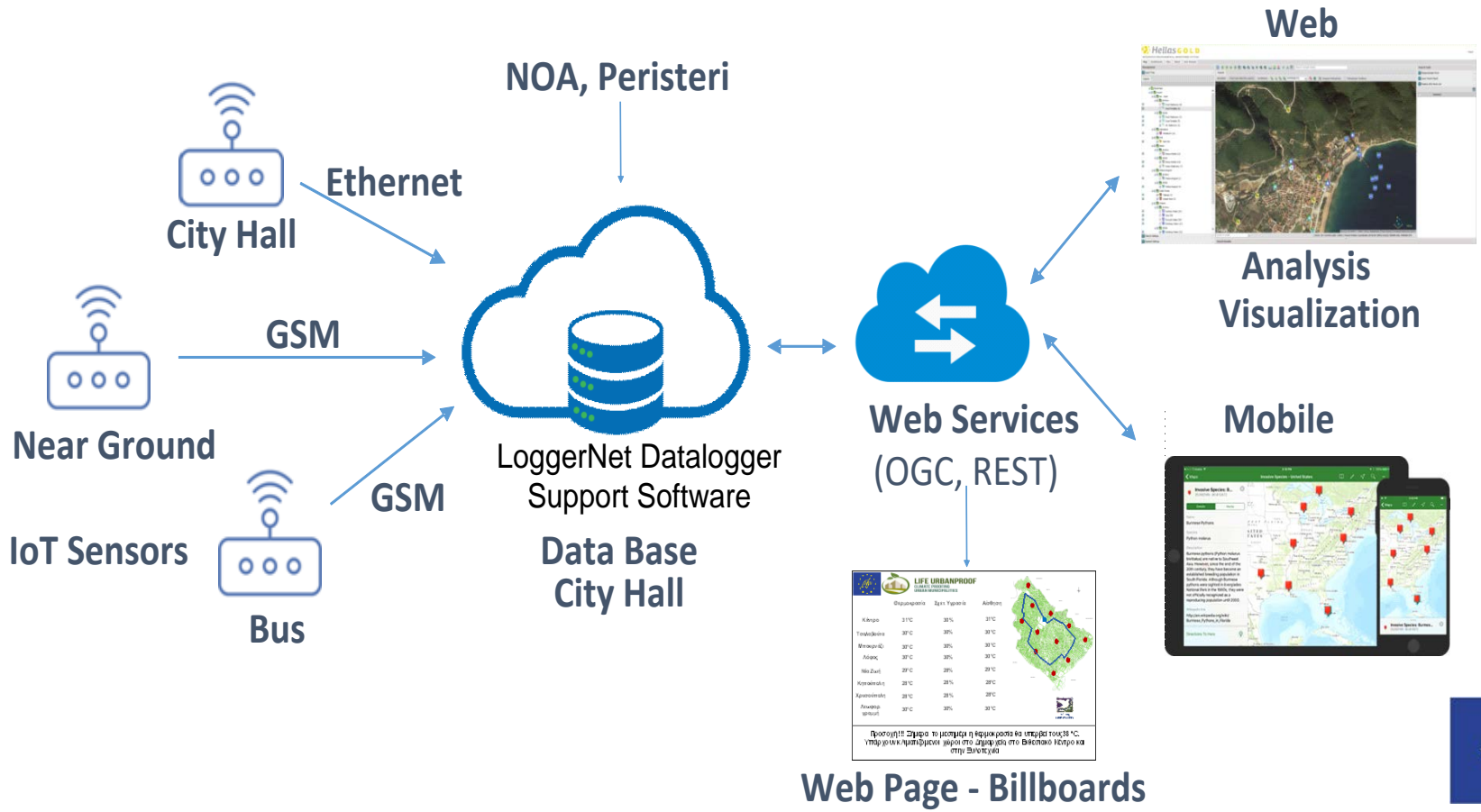
Covid-19 messages



Implementation of selected adaptation measure



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Implementation of selected adaptation measure



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Implementation of selected adaptation measure

Weather Services



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Thiseio Penteli **Peristeri** Methoni Klokotos Larisa Filotas Andros
Antikythira Helmos

Peristeri Site (Town Hall) On-line Information

Contact

Parameter	Code	Units	Value
Air Temperature	airTemp	°C	20.0
Mean Sea Level Pressure	mslPres	hPa	1009.7
Relative Humidity	relHumi	%	50.
Precipitation	insPrec	mm	0.0
Cumulative Precipitation ⁽¹⁾	cumPrec	mm	0.0
Global Horizontal Irradiance ⁽²⁾	gloIrra	W/m ²	953.
Maximum Wind Vector Speed ⁽³⁾	maxWind	m/s	3.5
Mean Wind Vector Speed ⁽³⁾	aveWind	m/s	2.3
Mean Wind Vector Direction ⁽³⁾	dirWind	deg	187.
StDev Wind Vector Direction ⁽³⁾	stdWind	deg	5.
Heat Index ⁽⁴⁾	heatIdx	°C	20.0
Wind Chill ⁽⁵⁾	windChl	°C	20.0
Last Updated (LST time): 19-04-2021, 13:45			

Click on the plots below or select the right arrow for the last 10-days

Information

The data presented are collected on-line from the Meteorological Station of the Municipality of Peristeri, located at the New Town Hall building.

These data are updated every 30 minutes.

The automatic meteorological station at Peristeri was funded by the LIFE URBANPROOF project (LIFE 15 CCA/CY/00086) and realized in co-operation with Dr. Vassilis Psiloglou, researcher at IERSD-NOA. Special thanks go to Nikos Venetas and Panagiotis Stamatis from Peristeri Municipality, for providing access to the station data in order to develop this website for the presentation of its recordings.

⁽¹⁾ The value of the cumulative precipitation is reset to zero at 08:00 and at 20:00 every day.

⁽²⁾ The values of irradiance are referred to horizontal plane.

⁽³⁾ The wind measurements are at 3m above the building roof.

⁽⁴⁾ The values of Heat or Discomfort Index are estimated using Air Temperature and Relative Humidity measurements.

⁽⁵⁾ The values of Wind Chill are estimated using Air Temperature and Wind Speed measurements.

Position of Peristeri Station

Latitude: 38° 0.773' N.
Longitude: 23° 41.699' E.
Height above sea level: 65m

Starting Day: February 2020





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Thank you !!!

<https://urbanproof.eu>

<https://tool.urbanproof.eu>

