

## Output factsheet: Strategies and action plans

Version 1

<b>Project index number and acronym</b>	CE452 Dynamic Light
<b>Lead partner</b>	HochSchule Wismar (HSW)
<b>Output number and title</b>	OT 2.2 (Strategy) - Strategies with action plans for city lighting & reduction of light pollution incl. dyn. Lighting
<b>Responsible partner (PP name and number)</b>	TEA S.p.A. (PP06)
<b>Project website</b>	<a href="https://www.interreg-central.eu/Content.Node/Dynamic-Light.html">https://www.interreg-central.eu/Content.Node/Dynamic-Light.html</a>
<b>Delivery date</b>	14/08/2019

### Summary description of the strategy/action plan (developed and/or implemented)

Municipalities determine measures and actions to promote and incentivize the use of outdoor public lighting systems for the provision of integrated services through complementary technologies.

TEA Reteluce S.r.l., a TEA Group company, manages about 11.000 LED technology light points in the Municipality of Mantova and the public lighting networks of another 27 municipalities in the province (for a number of lighting points of approximately 56.700).

The “All LED” project, finalized and executed by TEA Reteluce in all managed Municipalities of Mantova Province territory, provides for the complete replacement of current light sources with LED systems supplying a higher energy and lighting efficiency, the implementation of energy saving systems such as the point-to-point remote control and the structural and electrical redevelopment of public lighting networks. It is a development which is permitting to reach the important 75% reduction of the energy consumption related to public lighting networks, being the clearest and current example of strategy-become-reality. Thanks to all this, it has been possible to achieve the highest efficiency of the plants park, energy saving and the protection of natural conditions coherently with the so-called "Mayors Pact", which provides a substantial reduction of CO<sub>2</sub> by 2020 (-20% emissions / -20% energy demand / +20% renewable energies).

In order to proceed toward a correct development of an innovative public dynamic lighting, it is firstly important to assess places, times and ways lighting is highly needed. Only after these elements are

clear, it will be possible to better examine technical aspects and operating modes of the whole lighting system, scaling it to what requested. The main targets underlying this procedure still remain:

- Light sources control
- Energy consumptions rationalization
- Light pollution reduction
- Limitation of undesired events, such as the so-called “disability glare” (flash blindness)

Since the general LED technology retrofit intervention is on final stage, as a function of recent normative orientations (for the first time, both UNI, the Italian National Institution of Standardization, and Lombardy Region deal with the “adaptive lighting” issue) TEA Group has set itself the goal to create a standard technological pattern for the realization of “Bio-Dynamic” lighting implants dedicated to the so-called “Aggregative Areas”. The Municipality of Mantova is now owner of a cutting-edge technology within its territory, thanks to its presence on a European showcase in the lighting field. This could drive it, and other institutions, to take into consideration the possibility to gather old and new strategies and develop well-structured action plans addressed to improve the use of dynamic lighting systems throughout city and province, since it is already taking advantage of every improvement and positive feedback out of it.

### NUTS region(s) concerned by the strategy/action plan (relevant NUTS level)

The most relevant levels have been NUTS 2 (Regions), namely Lombardy (ITC4), with NUTS 3 (Provinces) and basically the Municipality of Mantova (ITC4B).

<i>NUTS 3</i>	<i>Address (Street, house number, postal code, city, country)</i>	<i>GPS coordinates</i>
Mantova ITC4B	46100 - Mantova - Italy	45° 09' 37.12" N 10° 47' 52.22" E

### Expected impact and benefits of the strategy/action plan for the concerned territories and target groups

TEA Group has acted as a “trait d’union” between stakeholders’ desires and what is actually feasible on a normative and economic point of view.

Taking advantage of the optical fiber network for data transmission and of the new electricity distribution grid at the service of the Bio-Dynamic light implant, it will be possible to integrate electric mobility stations for cars and e-bikes. Through the same technology, it will be feasible to prearrange

smart parking lots available to people with legally protected statuses, this way encouraging citizens to utilize means of transportation alternative to traditional cars and starting to redistribute all city spaces, in order to make city more pleasant and livable and improving citizens life quality.

Mantova is a scholastic tourism destination and Bosco Virgiliano is located in a protected environmental context, so it is hoped that the pilot area might as well become a scientific educational center about environment and sustainability, thanks also to the presence of school facilities and the activity of Parco del Mincio Environmental Guards. Bosco Virgiliano area could also be destined for hosting exhibitions and events currently taking place in the city historical center, contributing to reduce and decongest vehicles and people traffic, for the same area can be easily reached by public transports from main car parks placed at the city gates.

Since Bosco Virgiliano implant will be implemented with a “Smart” platform, it will be possible to integrate the system with environmental sensors aimed at the optimization of green spaces parameters management.

Several fields could then be involved and positively influenced in implementing brand new action plans led by the development of dynamic light systems, and not only, all over the territory.

### **Sustainability of the developed or implemented strategy/action plan and its transferability to other territories and stakeholders**

The choice has fallen on this type of areas because the adoption of “dynamic” systems for roads addressed to vehicular traffic would have required, as well as the definition and promulgation of appropriate regulations, a detailed and thorough risks analysis. As already mentioned, since the pilot area is located in a context subject to environmental protection regulations, specific attention has been paid to new infrastructures mitigation from both the building (see the use of low environmental impact innovative foundations and poles with a color suitable for the best integration in the context - RAL 7022), and the technological (adoption of high efficiency “Full Cut-Off” Bio-Dynamic LED light sources) point of view. Moreover, TEA Group will exploit the pilot area, which is prearranged with active platform (optical fiber and power line technology), as experimental site for new technological implementations, taking advantage of it in order to test sensors dedicated to analyze and monitor parameters about weather conditions, environmental status, phytobiology and a wide range of other fields. The main expectation concerns the possibility of integration between public lighting and “Smart” and “IoT” active platforms, the same a dynamic light system could be connected on.

### **Lessons learned from the development/implementation process of the strategy/action plan and added value of transnational cooperation**

We are actually working hard with the aim for implementing proper “dynamic light” plans. It is paramount to arrange a before-after comparison about any kind of savings, advantages and disadvantages with this purpose: citizens involvement is and must be on the basis of the whole process. Local, national and international collaboration may be realistically the key to achieve the integration of such innovative solutions, which will definitely be a solid part of our future, for a hopefully better life quality. Beside this, clear technical and technological ideas should run aside equally clear and high attention to social, environmental and historical issues.

### References to relevant deliverables and web-links If applicable, pictures or images to be provided as annex

Strategies and action plans are based on data and analyses from several DTs, in particular:

- DT 1.1.2 - Joint Monitoring Tool
- DT 1.1.3 - Demand Analysis
- DT 1.2.2 - Test Implementation Reports
- DT 2.2.1 - Analysis of the Lighting Situation
- DT 3.1.1 - Analysis of the Global Lighting Situation in Urban Green Areas
- DT 3.1.2 - Selection of Pilot Locations & Form of Lighting Application
- DT 3.1.3 - Analysis of the Specific Lighting Situation, Aggregative Areas in Mantova
- DT 3.1.4 - Planning of Intelligent Light Concepts