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Light pollution: issues, regulations and control technologies

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The dissertation is organised in two parts, the first one devoted to light pollution (also known as photopollution or luminous pollution) and the laws and regulations born to combat it, the second part is market research which aims to identify new technological solutions and designs aimed to control this phenomenon.

Light pollution is a problem of a global scale, primarily related to urbanisation and industrial development of the major urban centres. The legislative and regulatory bodies at international and national levels have analyzed numerous laws, regulations and documents with the aim of fighting against light pollution. The Italian regional and provincial laws are easily available on their websites, however those covering foreign regulations were more complex to get hold of, as there is a wide range of different documents each of them dealing with the problem from different point of view. The foreign documents also all needed to be translated in the best possible way to avoid losing the full sense of the document.

The first part led us to these subjective observations:

- There is a need for European regulations to control light pollution;
- A national legislation is equally necessary in order to unify the various regional arrangements;
- The law should not just be rule based but should have defined objectives and strategies to reach the final goal.

The second part, researched in parallel with the first, is market research, focused on new appliances compliant and/or non compliant to the existing laws and legislations relating to light pollution. At this stage it was very important to study the individual parts of a light source, such as light bulbs or light covers, and the new technologies that promote energy saving, such as flux reducers. For this part of the research contacts with manufacturers of lighting equipment has proved very useful, which have provided useful information for the study and also several ideas for market assessment and laws.

To conclude, the market analysis has shown the distance between the legislative landscape around light pollution, Italian in particular, and the technological development of lighting equipment. In particular we have noted that the market, faced with too restrictive regulation, will not have the stimulus to develop new solutions to bring together the control of light pollution and energy saving.

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