The role of green and blue infrastructures for active mobility in urban areas

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ISPRA
The Italian Institute for Environmental Protection and Research (IEPR) is a public research body. It responds to the environmental protection obligations set by the national law, such as control, monitoring, assessment, prevention, inspection, technical and scientific advise, as well as information and communication, education and training. It follows the general guidance received by the Minister for Environment, Land and Sea.

In 2016 a new law further expanded its area of operation and responsibilities, entrusting ISPRA to coordinate the National System for Environmental Protection (NSEP) composed by agencies from 10 Italian regions and 2 autonomous provinces (namely, Trento and Bolzano). The NSEP, with a workforce of about 10,000 people over the national territory, ensures a thorough monitoring, often with field work, also with the specific task to foster the achievement across the whole country of minimum homogeneous levels of environmental protection.

ISPRA handles and manages the National Environmental Information System through the collection and elaboration of data and information.

One of the ISPRA strategic target is sharing the circular economy principles in relation to urban life quality.
KNOWING AND MEASURING: NSEP REPORT ON URBAN ENVIRONMENTAL QUALITY

120 MUNICIPALITIES

14 METROPOLITAN AREAS

30% of the Italian population

10 ISSUES

SUSTAINABLE MOBILITY
Car accidents, air pollution, noise, traffic jam, public space occupation, sedentarity, loss of socialisation, loss of capacity to control (or to oversee) the urban territory, loss of urban space are the principal problems that we have to face with as soon as possible.

We are aware of the importance to include also the active mobility needs into the planning. A sustainable mobility is cannot be achieved by neglecting active mobility.

Because of these concerns and awarenesses last December I coordinated the editing of an ISPRA report about urban pedestrian mobility. Papers written by more than 50 national and international experts belonging to academic and institutional world and to the civil society have been collected. During the presentation of the report, a round table with experts, institutions, environmental associations as well as students took place.

The output of the debate was that in urban planning pedestrian mobility needs must be fulfilled with biking and public transport. Private cars, responsible of high accident density and air pollution, in central areas of large cities have to be banned allowing citizens to enjoy roads and squares. In residential suburbs it is necessary to introduce “30 or 20 zones” and Limited Traffic Zones.
Filling the gap?
Effective choices, SMART policies, integration and win-win solutions
The ways people reach **working place**, modal split

(official survey of population 1971 - 2011)
Percentage of people who usually reach working place, modal share (official survey of population 1971 – 2011)

- **Bike**
- **Motorbike**
- **Private car**
- **Public transport**
- **Walking**

Year | Bike | Motorbike | Private car | Public transport | Walking |
--- | --- | --- | --- | --- | --- |
1971 | 32 | 20 | 27 | 9 | 13 |
1981 | 22 | 19 | 46 | 7 | 7 |
1991 | 16 | 12 | 63 | 6 | 4 |
2001 | 12 | 8 | 71 | 4 | 5 |
2011 | 11 | 9 | 71 | 4 | 4 |
At local level: Milan municipalities

**Milano census 2001**

- Public transport: 32%
- Private car: 44%
- Walking: 14%
- Motorbike: 7%
- Bicycle: 3%
- Other: 0%

**Milano census 2011**

- Public transport: 39%
- Private car: 35%
- Walking: 12%
- Motorbike: 8%
- Bicycle: 6%
- Other: 0%
The ways people move for studying reasons, moldal share (official survey of population 1971 - 2011)
Percentage of population moving for studying reasons, modal split (official survey of population 1971-2011)

- **1971**: 9% Bike, 2% Motorbike, 20% Walking, 66% Private car
- **1981**: 14% Bike, 1% Motorbike, 23% Walking, 52% Private car
- **1991**: 13% Bike, 3% Motorbike, 27% Walking, 35% Private car
- **2001**: 11% Bike, 4% Motorbike, 22% Walking, 26% Private car
- **2011**: 3% Bike, 2% Motorbike, 30% Walking, 40% Private car

Legend:
- Bike
- Motorbike
- Private car
- Public transport
- Walking
At local level: the municipality of Milan

Milano census 2001
- Walking: 36%
- Public transport: 32%
- Private car: 24%
- Bike: 3%
- Motorbike: 5%
- Other: 0%

Milano census 2011
- Walking: 40%
- Public transport: 34%
- Car: 19%
- Other: 0%
- Bike: 4%
- Motorbike: 3%
LPT demand for 116 Italian municipalities. Years 2011-2015
Public transport supply in 116 Italian municipalities.

Places/km – Years 2011-2015
### BARE CONTRIBUTION TO ITALIAN MOBILITY FROM PUBLIC TRANSPORT

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>17,1</td>
<td>23,1</td>
</tr>
<tr>
<td>Bikes</td>
<td>3,3</td>
<td>3,8</td>
</tr>
<tr>
<td>Motorbikes</td>
<td>3,0</td>
<td>5,7</td>
</tr>
<tr>
<td>Private cars</td>
<td>65,3</td>
<td>57,5</td>
</tr>
<tr>
<td><em>(as passengers)</em></td>
<td>8,5</td>
<td></td>
</tr>
<tr>
<td>Bus/Tram/Underground</td>
<td>4,4</td>
<td>5,7</td>
</tr>
<tr>
<td>Coach</td>
<td>1,3</td>
<td>1,4</td>
</tr>
<tr>
<td>Train</td>
<td>0,9</td>
<td>0,7</td>
</tr>
<tr>
<td>Intermodality</td>
<td>4,6</td>
<td>2,3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100,0</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Isfort 2017*
At international level

<table>
<thead>
<tr>
<th></th>
<th>Private car</th>
<th>Public transport</th>
<th>walking</th>
<th>bike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parigi</td>
<td>17%</td>
<td>33%</td>
<td>47%</td>
<td>3%</td>
</tr>
<tr>
<td>Berlino</td>
<td>31%</td>
<td>26%</td>
<td>30%</td>
<td>13%</td>
</tr>
<tr>
<td>Madrid</td>
<td>29%</td>
<td>42%</td>
<td>29%</td>
<td>0%</td>
</tr>
<tr>
<td>Londra</td>
<td>40%</td>
<td>37%</td>
<td>20%</td>
<td>3%</td>
</tr>
<tr>
<td>Roma</td>
<td>57%</td>
<td>27%</td>
<td>16%</td>
<td>0%</td>
</tr>
<tr>
<td>Milano</td>
<td>47%</td>
<td>27%</td>
<td>22%</td>
<td>4%</td>
</tr>
<tr>
<td>Napoli</td>
<td>51%</td>
<td>18%</td>
<td>30%</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Fonte: Connettere l’Italia 2016.*
Note: respondents were given the option to mention more than one means of transport for going to work (as such, the shares may rise to over 100%): Athina (EL), Paris (FR), Lisboa (PT) and London (UK): greater city.
Source: Eurostat (online data code: urb_percep)
### PEDESTRIAN AREAS IN ITALIAN MUNICIPALITIES

<table>
<thead>
<tr>
<th>City</th>
<th>m²/inhabitant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venezia</td>
<td>4.68</td>
</tr>
<tr>
<td>Verbania</td>
<td>1.72</td>
</tr>
<tr>
<td>Terni</td>
<td>1.68</td>
</tr>
<tr>
<td>Lucca</td>
<td>1.43</td>
</tr>
<tr>
<td>Cremona</td>
<td>1.16</td>
</tr>
<tr>
<td>Firenze</td>
<td>1.14</td>
</tr>
<tr>
<td>Pescara</td>
<td>1.07</td>
</tr>
<tr>
<td>Rimini</td>
<td>1.06</td>
</tr>
<tr>
<td>Cosenza</td>
<td>1.05</td>
</tr>
<tr>
<td>Mantova</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Source: *Legambiente*
Negative externality and indirect costs:

-Air pollution, harmful for the environment and health, traffic jam involves energy consumptions

-(Un)safe roads, accidents in 2017 in Italy decreased in the number of car accidents and injured people involved, besides an increase in the number of deaths (3% compared to 2016), in most of the cases road “weak users” (such as passers-by, bikers and motorbikers) were involved
The integration between green/blue infrastructures can help to improve pedestrian mobility
Green Blue

Active mobility

- Environment improvement
- Reduction of private car use
- Active mobility more appealing
- T mitigation, More fresh air, PM capture, Noise decrease
- More physical activity
- Less sedentarity
- Healthy lifestyle
- Social activities
- Territory control
- Less private cars
- Less air pollution
- Less noise
The prove of the efficiency of integrating green/blue infrastructures with pedestrian mobility was given by several studies. One of the most interesting research was carried out by Luis Neto in 2015: the so-called *Walkability Index*
Favourite paths has been lined with trees or with blue infrastructures

Immagini di Google Street View dei 10 percorsi migliori
Amongst the 46 indicators of this approach, the presence of green or blue infrastructures was more relevant compared with others elements.

This is a confirmation for the key role of green and blue infrastructures in order to improve urban comfort and the perceived quality of infrastructures for pedestrian mobility suggesting the necessity of a more efficient integration among sectoral policies within the local urbanistic planning.
THANKS FOR YOUR ATTENTION