

## Chapter 5

# Green Transport Infrastructure: From Motorways to Bikeways

**Kristiane Davidson**

*Queensland University of Technology, Australia*

**Ned Lukies**

*Queensland University of Technology, Australia*

**Debbie Lehtonen**

*Queensland University of Technology, Australia*

### ABSTRACT

*In an age when escalating fuel prices, global warming and world resource depletion are of great concern, sustainable transport practices promise to define a new way of mobility into the future. With its comparatively minimal negative environmental impacts, non reliance on fuels and positive health effects, the simple bicycle offers significant benefits to humankind. These benefits are evident worldwide where bicycles are successfully endorsed through improved infrastructure, supporting policies, public education and management. In Australia, the national, state and local governments are introducing measures to improve and support green transport. This is necessary as current bicycle infrastructure is not always sufficient and the longstanding conflict with motorized transport still exists. The aim for the future is to implement sustainable hard and soft bicycle infrastructure globally; the challenges of such a task can be illustrated by the city of Brisbane, Australia.*

### INTRODUCTION

Of all the modes of transport available to us today, one of the most sustainable and efficient modes is cycling. Cycling is a low cost, low impact mode of transport that can be accessed by all ages, in all socio-economic situations. Looking into the future, the increased use of bicycles for personal transport, particularly commuting, seems inevitable with the

rise in population density, rise in fuel costs, and rise in environmental concerns. The greatest task involved in increasing the use of cycling as a transport mode is increasing its uptake by citizens that would normally utilize motorized transport. There is a theory that more suitable, safe bicycle facilities will encourage more cycling rather than driving (McClintock, 2002). Hence, for a city to increase the portion of people cycling, it must implement suitable, safe bicycle facilities, and consequently advance its sustainability goals.

DOI: 10.4018/978-1-61520-775-3.ch005

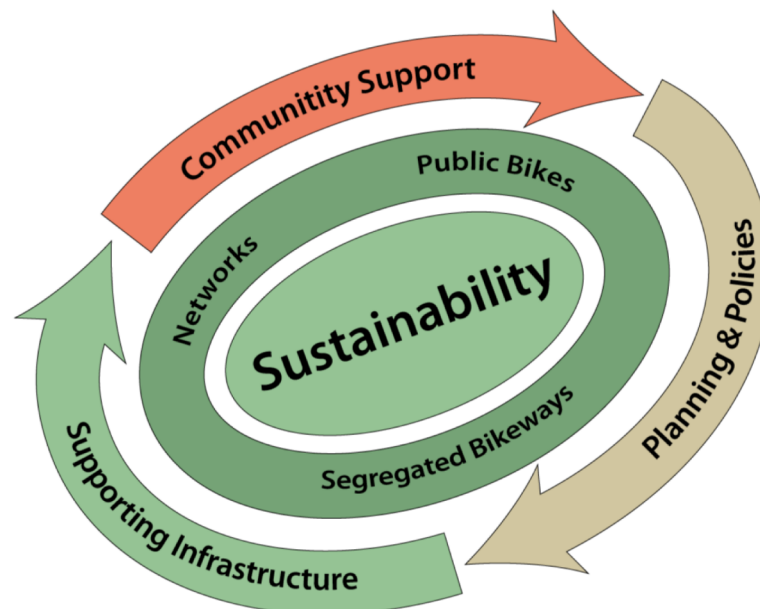
However, safe facilities and the provision of bikes alone may not entice a social change such as switching to cycling. Therefore, there is the need for both hard and soft infrastructure to both encourage and support cycling, and to meet the challenge of ensuring the use of bicycles rather than motor vehicles in the future. Hard infrastructure includes physical elements such as segregated bike lanes, green waves, parking facilities and public bike hire schemes – all of which will be explored in this chapter. Soft infrastructure such as policy, education and management strategies which facilitate and accommodate bicycle usage will be discussed.

In the realms of urban and regional development, planning for cycling is predominately on a metropolitan scale. However, as is explored in this chapter, there are technologies and methods of integrating public transport that can extend the reach of bike infrastructure. While implementing bicycle infrastructure is important to a city's overall plan, this implementation is not without its challenges. These challenges are illustrated

in the exploration of sustainable transport in the Australian city of Brisbane.

Looking outward to the international community, the use of the bicycle for transport and commuting is widespread and, indeed, successful in many places. These include countries such as The Netherlands, Sweden, Canada and France as well as countries in the Middle Eastern, South East Asian and South American nations. The success of cycling in these locations can be attributed to well planned, bike-specific infrastructure. An examination of these case studies and reputable literature reveals that the best approach is to have an interconnected network of bicycle lanes that are segregated from motor traffic, as well as adequate facilities and amenities, both on route and at common destinations. This approach also includes the provision of bicycles themselves as an integrated element of the entire public urban transport network, therefore supporting a holistic approach to sustainability.

*Figure 1. Requirements for achieving sustainability through bicycle infrastructure*



13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/green-transport-infrastructure/42407](http://www.igi-global.com/chapter/green-transport-infrastructure/42407)

## Related Content

---

### A Point of View on How to Achieve a More Sustainable Marine Refrigerated Transport

Feiza Memet (2014). *Marine Technology and Sustainable Development: Green Innovations* (pp. 97-108).

[www.irma-international.org/chapter/a-point-of-view-on-how-to-achieve-a-more-sustainable-marine-refrigerated-transport/84518](http://www.irma-international.org/chapter/a-point-of-view-on-how-to-achieve-a-more-sustainable-marine-refrigerated-transport/84518)

### Sustainable Analysis of Process Parameters During TIG Welding of Dissimilar Joining Between 304 Stainless Steel and AISI 1018 Mild Steel

Indraniil Mandal, Thia Paul, Sabyasachi Dey, Pratik Roy, Shamik Mahanta, Subhankar Dey, Dipak Sarkar, Arpan Kumar Mondaland Tanmoy Ghosh (2022). *International Journal of Social Ecology and Sustainable Development* (pp. 1-14).

[www.irma-international.org/article/sustainable-analysis-of-process-parameters-during-tig-welding-of-dissimilar-joining-between-304-stainless-steel-and-aisi-1018-mild-steel/295970](http://www.irma-international.org/article/sustainable-analysis-of-process-parameters-during-tig-welding-of-dissimilar-joining-between-304-stainless-steel-and-aisi-1018-mild-steel/295970)

### Effect of the Differences Among Individual Farmers on the Intention and Adoption of Conservative Agriculture Practices in Pakistan: Intention and Adoption of Conservative Agriculture Practices

Naeem Hayat, Abdullah Al Mamunand Uma Thevi Munikrishnan (2022). *International Journal of Social Ecology and Sustainable Development* (pp. 1-16).

[www.irma-international.org/article/effect-of-the-differences-among-individual-farmers-on-the-intention-and-adoption-of-conservative-agriculture-practices-in-pakistan/289638](http://www.irma-international.org/article/effect-of-the-differences-among-individual-farmers-on-the-intention-and-adoption-of-conservative-agriculture-practices-in-pakistan/289638)

### Integrated Economic and Spatial Planning for the Food-Energy-Water Nexus

Andrea Bassiand Louise Gallagher (2016). *Economic Modeling, Analysis, and Policy for Sustainability* (pp. 54-73).

[www.irma-international.org/chapter/integrated-economic-and-spatial-planning-for-the-food-energy-water-nexus/150097](http://www.irma-international.org/chapter/integrated-economic-and-spatial-planning-for-the-food-energy-water-nexus/150097)

### Developing Environmentally Responsible Business Strategies: A Research Perspective

Bharti Trivedi (2011). *International Journal of Green Computing* (pp. 47-57).

[www.irma-international.org/article/developing-environmentally-responsible-business-strategies/55224](http://www.irma-international.org/article/developing-environmentally-responsible-business-strategies/55224)