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by

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**Defining Sustainability in Transportation:  
An Effort to Strengthen MAP-21**

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An Effort to Strengthen MAP-21**

**by**

**Aaron Jacob Tinjum, BA**

**Report**

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## **Abstract**

### **Defining Sustainability in Transportation: An Effort to Strengthen MAP-21**

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The University of Texas at Austin, 2013

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The Transportation Research Board of the National Academies identifies nine current and critical issues facing the United States transportation sector: congestion, environmental preservation, deteriorating infrastructure, inadequate funding, social equity issues, susceptibility to natural disasters, insufficient safety improvements, outdated government institutions and a lack of investment in innovation. All of these issues directly threaten the sustainability of transportation in the United States. While numerous transportation stakeholders have presented definitions of sustainable transportation, there is significant variation and disagreement over what sustainability actually means in transportation. The absence of a coherent, universal definition has undermined the overall effectiveness of transportation plans, policies and programs, including the current federal highway authorization, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) as well as the Congestion Mitigation and Air Quality Improvement (CMAQ) program. Through examining the definitions of sustainable transportation put forth by the European Union, Transport Canada, the Transportation Research Board (TRB), the

American Association of State Highway and Transportation Officials (AASHTO), the Interagency Partnership for Sustainable Communities and various state departments of transportation (DOTs), this report seeks to establish a clear definition of sustainable transportation, adopt applicable sustainable transportation indicators and offer meaningful recommendations that help strengthen the overall sustainability of MAP-21 and the CMAQ program.

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## INTRODUCTION

In the 2009 edition of “Critical Issues in Transportation,” the Transportation Research Board of the National Academies identifies nine critical issues facing the United States transportation system in the 21<sup>st</sup> century. These nine issues are: first, increasing congestion in all modes of transportation; second, energy, environmental and climate change challenges; third, vast, deteriorating transportation infrastructure; fourth, inadequate revenues for financing future and current transportation projects and repairs; fifth, serious social equity issues with burdens on disadvantaged citizens; sixth, vulnerability to natural disasters and terrorist attacks; seventh, insufficient improvements in safety issues; eighth, outdated and ill-prepared 20<sup>th</sup> century institutions mismatched with 21<sup>st</sup> century challenges; and finally, inadequate investments in human, intellectual capital and innovation.<sup>1</sup> All of these issues directly threaten the overall sustainability of transportation in the United States.

While the need for a more sustainable transportation system may be obvious, it is certainly not simple. There have long been contradictions and disagreements over the exact definition of sustainable transportation, both domestically and internationally, as well as in academic circles, the government and in the media. Often times, the term “sustainable” is used as a shallow synonym of “good” without fully comprehending its meaning. Additionally, “sustainable transportation” or “sustainability” is strongly associated with and solely limited to environmental protection and issues.<sup>2</sup> While “sustainability” is widely considered a good thing and is often inclusive of environmental

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<sup>1</sup> Transportation Research Board. “Critical Issues in Transportation: 2009 Update.” Transportation

<sup>2</sup> The Centre for Sustainable Transportation, “Defining Sustainable Transportation.” Paper prepared for Transport Canada, The Centre for Sustainable Transportation at the University of Winnipeg, 2005. [http://cst.uwinnipeg.ca/documents/Defining\\_Sustainable\\_2005.pdf](http://cst.uwinnipeg.ca/documents/Defining_Sustainable_2005.pdf).

issues, it is a serious disservice to either ambiguously use the term or limit its scope. The misunderstanding and misuse associated with sustainable transportation directly interferes with the ability of policymakers and planners to address the current critical issues facing transportation in the United States.

## Justification and Overview

Before an attempt to define sustainable transportation can be made, two important questions should be addressed. The first question pertains to relevance: is a definition actually needed for sustainable transportation? After all, there have been many attempts by many different agencies and organizations to define the term over the past decade. The second question relates to feasibility: is it even possible to clearly define sustainable transportation? It is the position of this paper that it is very possible to establish a more coherent definition by threading common themes and elements from past research. It is also the position of this paper that a definition is absolutely vital in guiding transportation planning and policymaking in the United States.

The first question was directly addressed in a paper prepared for Transport Canada in 2005 by one of the leaders in the subject: the Centre for Sustainable Transportation.<sup>3</sup> As the authors aptly concluded, consistency in the definition could be very useful in policy discourses and planning.<sup>4</sup> The report noted that “sustainable transportation” was used 89 and 70 times in two recent and respective editions of Transport Canada’s *Sustainable Development Strategies* without even possessing an acknowledged or agreed upon definition of the term.<sup>5</sup> Without a clear concept of what sustainability means in transportation, it is unlikely that the most effective policies and programs can be created and implemented.

This issue in definition is not limited solely to the Canadian Government; it is also true with the United States. In a 2011 report by the United States Environmental Protection Agency (EPA) on transportation performance measures, sustainable

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<sup>3</sup> The Centre for Sustainable Transportation, 16.

<sup>4</sup> Ibid., 16.

<sup>5</sup> Ibid.

transportation is defined in two pages of descriptions, rather than in a direct, coherent or universal definition.<sup>6</sup> Furthermore, with a multitude of federal transportation agencies and 50 different state departments of transportation (DOTs), the definition of sustainable transportation becomes even more muddled and mixed.

While a clear definition of sustainable transportation would certainly aid in transportation policy discussions and decision-making, the second question is over whether it is even possible to adopt a clear and agreed upon definition. There are certainly many different conceptions of sustainable transportation. However, three dimensions hold true in most of definitions of the term: economic vitality, environmental protection and social equity. By using these three concepts as a foundation, a clear definition can be established.

This paper briefly overviews the basic concepts of sustainability and sustainable development. Second, it examines previous and different definitions of sustainable transportation from several research organizations, government agencies and state departments of transportation (DOTs). Third, it will adopt a definition of sustainable transportation that weaves elements of previous definitions, but also directly addresses quality of life or citizen welfare over the long term, as relating to transportation. It will then apply this definition to the current Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) and its Congestion Mitigation and Air Quality Improvement (CMAQ) program in the United States. Finally, it will conclude by offering meaningful recommendations to strengthen the sustainability of MAP-21 and the CMAQ program.

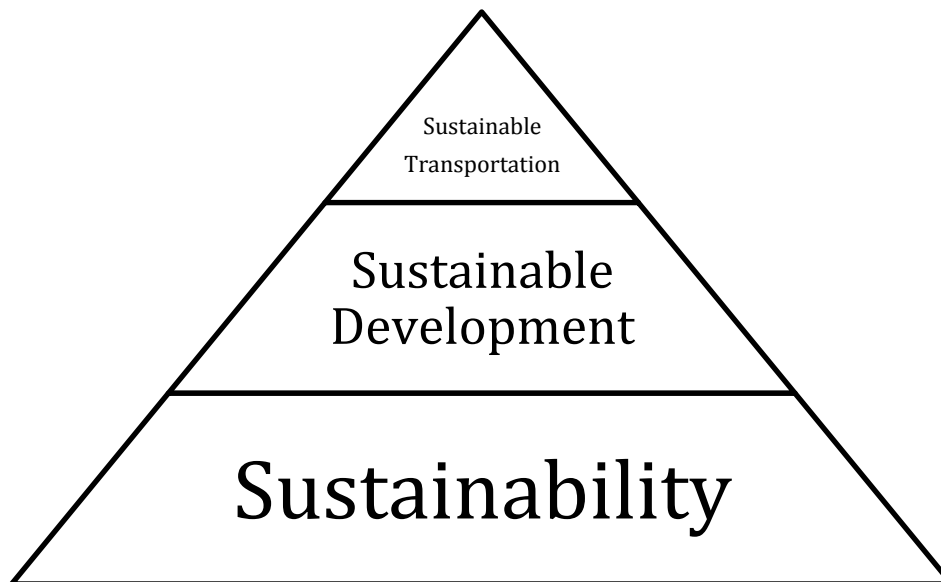
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<sup>6</sup> United States Environmental Protection Agency. "Guide to Sustainable Transportation Performance Measures." ICF International, August 2011.  
[http://www.epa.gov/smartgrowth/pdf/Sustainable\\_Transpo\\_Performance.pdf](http://www.epa.gov/smartgrowth/pdf/Sustainable_Transpo_Performance.pdf).

## Sustainability and Sustainable Development

The “Transportation Planning for Sustainability Guidebook” by the Georgia Institute of Technology presents three interrelated definitions necessary for understanding and what sustainability means in transportation: sustainability, sustainable development and sustainable transportation. Before sustainable transportation can accurately be defined, a discussion of its underlying components and considerations must be had. The hierarchy between the sustainability, sustainable development and sustainable transportation is demonstrated in the figure below.

Figure 1. Theoretical Hierarchy for Sustainability<sup>7</sup>



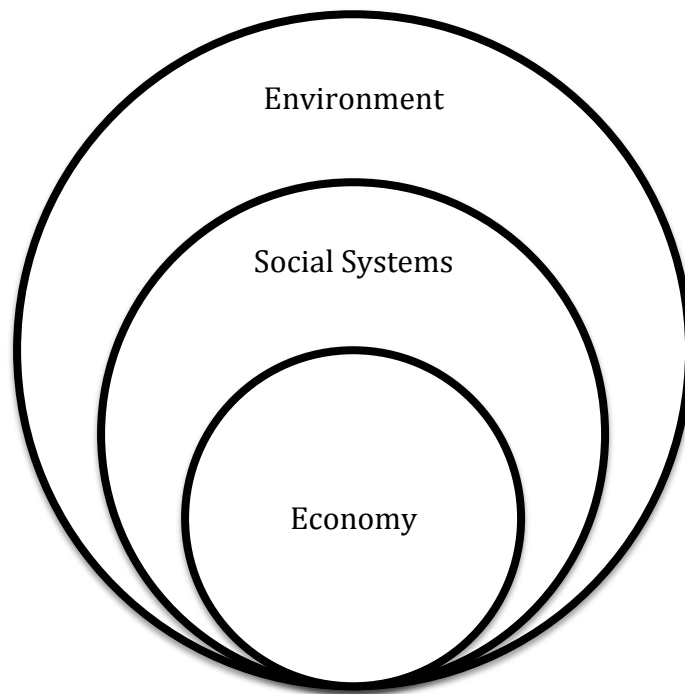
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<sup>7</sup> Todd Litman and David Burwell. “Issues in sustainable transportation.” *Int. J. Global Environmental Issues*, Vol. 6, No. 4 (2006): 331-347. [http://gasfreenj.com/CTE\\_WEB/VPTI\\_SUSTAINABILITY.pdf](http://gasfreenj.com/CTE_WEB/VPTI_SUSTAINABILITY.pdf).

## SUSTAINABILITY

There is no universal definition of sustainability. However, there is relative agreement over what sustainability encompasses. A commonly employed definition is from the American Society of Civil Engineers: “a set of environmental, economic and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely without degrading the quantity, quality or availability of natural, economic and social resources.”<sup>8</sup> The following figure represents the different dimensions of sustainability.

Figure 2. Dimensions of Sustainability<sup>9</sup>



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<sup>8</sup> Ibid.,10.

<sup>9</sup> “Center for Environmental Excellence by AASHTO, Sustainability,” accessed April 22, 2013, [http://environment.transportation.org/environmental\\_issues/sustainability/](http://environment.transportation.org/environmental_issues/sustainability/).

In this particular model, the environment is the most expansive dimension with social systems and the economy functioning within it. These dimensions are particularly important because they set parameters for what type of considerations should be included in a definition: economic, environmental and social. Thus, the definitions of both sustainable development and sustainable transportation should contain a foundation that includes economic, environmental and social dimensions.



## **SUSTAINABLE DEVELOPMENT**

Just as with sustainability, there is no clear or universal definition for sustainable development. However, a commonly cited definition is from the World Commission on Environment and Development. Under this popular definition, sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>10</sup>

This definition put forth by the World Commission on Environment and Development is both extremely ambiguous and representative of the problem in defining sustainability. It does not clearly define open-ended terms such as “development” or “needs.” Without clearly ascertaining what is meant by “development” or “needs,” it is almost impossible to know what is meant by “sustainable development.” Furthermore, this definition does not include any of the previously mentioned specific parameters of sustainability: the economy, the environment or social systems. Any definition of sustainable development must include both specific terms and specific parameters if it is to be of any use.

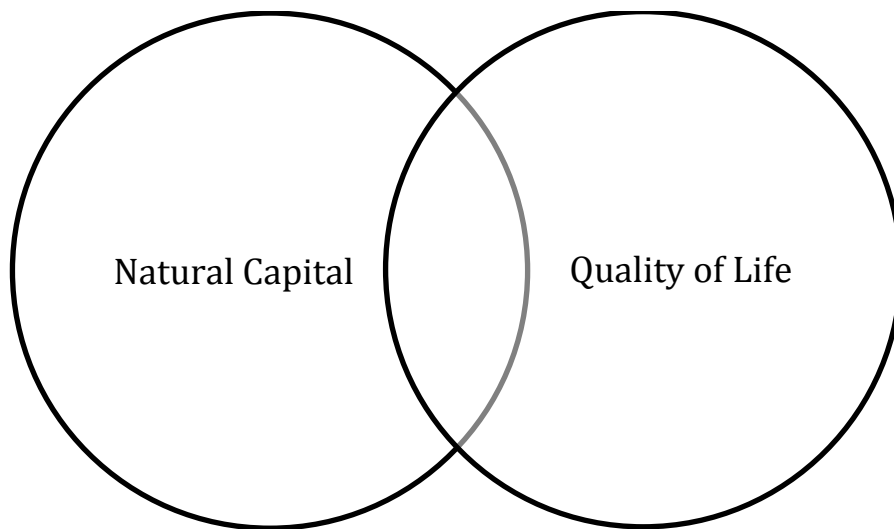
A definition provided by a Federal Highway Administration report presents a stronger understanding of sustainable development, one that includes economic, environmental and social considerations. These sustainable development considerations are represented in two different categories: first, the use of natural capital or natural resources and the environment; and, second, maintaining an acceptable quality of life. Thus, Sustainable development is the ideal balance between natural capital consumption and maintenance of a high quality of life. The following figure, commonly used in discussions related to sustainable development, demonstrates the interplay between the

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<sup>10</sup> Center for Environmental Excellence by AASHTO.

two biggest considerations when considering sustainable development: natural capital and the quality of life.

Figure 3. Natural Capital and Quality of Life<sup>11</sup>

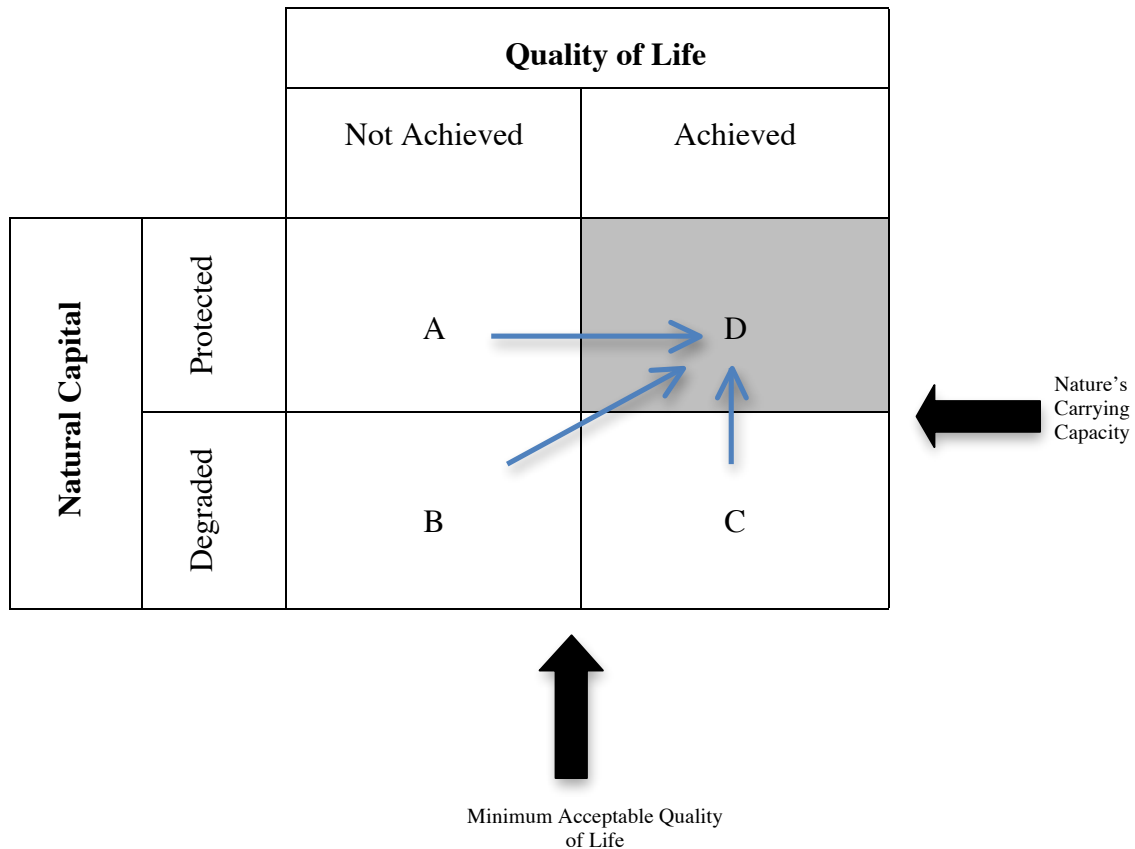


In the figure, sustainable development is represented in the overlap between minimized natural capital consumption and maximized quality of life. The following figure elaborates on how sustainable development objectives are more specifically achieved.

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<sup>11</sup> Federal Highway Administration, "Transportation Planning for Sustainability Guidebook," January 2011. [https://www.fhwa.dot.gov/environment/climate\\_change/sustainability/resources\\_and\\_publications/guidebook/sustain.pdf](https://www.fhwa.dot.gov/environment/climate_change/sustainability/resources_and_publications/guidebook/sustain.pdf).

Figure 4. Sustainable Development and Sustainability<sup>12</sup>



As the figure reiterates, the two main considerations in sustainable development are natural capital consumption and quality of life maintenance. Natural capital refers to natural resources or the environment's ability to support a specific project.<sup>13</sup> Quality of life refers to citizen welfare. The Organization for Economic Co-operation and Development (OECD) identifies eleven different indicators for quality of life, including:

<sup>12</sup> Federal Highway Administration, "Transportation Planning for Sustainability Guidebook," January 2011. [https://www.fhwa.dot.gov/environment/climate\\_change/sustainability/resources\\_and\\_publications/guidebook/sustain.pdf](https://www.fhwa.dot.gov/environment/climate_change/sustainability/resources_and_publications/guidebook/sustain.pdf).

<sup>13</sup> Ibid., 5-6.

housing, income, jobs, community, education, environment, civic engagement, health, life satisfaction, safety and work-life balance.<sup>14</sup> By maximizing desirable outcomes in each of these areas, quality of life is raised above what is minimally acceptable.

When considering sustainable development, a “sustainable” policy or project is one in which the natural capital and the quality of life objectives are achieved.<sup>15</sup> To achieve these goals, consumption of natural resources must be minimized and quality of life indicators should be maximized. Visually, the desirable outcome is located in “Box D” of Figure 4 in which the natural capital is protected and the quality of life is above what is minimally acceptable. Thus, any sustainable transportation policy or program must protect the natural capital and exceed the minimum acceptable quality of life.

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<sup>14</sup> OECD, “Your Better Life Index,” Accessed April 22, 2013. <http://www.oecdbetterlifeindex.org/about/better-life-initiative/>.

<sup>15</sup> Federal Highway Administration, 5-6.

## **Defining Sustainable Transportation**

In order to properly define sustainable transportation, it is necessary to examine the definitions employed by major transportation stakeholders. For this paper, six different definitions will be examined: first, the European Commission or the European Union (EU); second, Transport Canada, which often adopts definitions created by the Centre for Sustainable Transportation; third; the Transportation Research Board (TRB); fourth, the American Association of State Highway and Transportation Officials (AASHTO); fifth, the definitions used under the Interagency Partnership for Sustainable Communities by the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA); and, finally, state departments of transportation (DOTs). By examining definitions employed by each of these entities, it will be possible to establish a clear working definition of sustainable transportation.

## THE EUROPEAN UNION

The first definition of sustainable transportation to be examined is that of the European Union (EU). For the EU, sustainable transport is defined in its overall objective to “ensure that our transport systems meet society’s economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment.”<sup>16</sup> This objective directly addresses the three different areas of sustainability: the environment, social systems and the economy. From its definition, the EU has been able to establish working objectives and targets as indicated below:<sup>17</sup>

- Decoupling economic growth and the demand for transport with the aim of reducing environmental impacts.
- Achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions.
- Reducing pollutant emissions from transport to levels that minimize effects on human health and/or the environment.
- Achieving a balanced shift towards environment friendly transport modes to bring about a sustainable transport and mobility system.
- Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimize impacts on health.
- Modernizing the EU framework for public passenger transport services to encourage better efficiency and performance by 2010.

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<sup>16</sup> European Commission. “Transport & Environment: Developing a sustainable transport system.” Accessed April 22, 2013. <http://ec.europa.eu/environment/air/transport/sustainable.htm>.

<sup>17</sup> Ibid.












- In line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 14g/km (2008/09) and 120g/km (2012).
- Halving road transport deaths by 2010 compared to 2010.

By establishing the aforementioned goals and through a clear conception of sustainable transportation, the EU can properly assess the sustainability of its current transportation system. As the European Commission notes, “The EU transport system is currently not sustainable, and in many respects moving away from sustainability rather than towards it.”<sup>18</sup> From its well-defined definition and sustainability goals in relation to transportation, the European Union has been able to monitor its progress. The following table indicates the EU’s current progress to its goals and objectives, with the clouds representing a lack of progress and sunlight representing sufficient progress.

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<sup>18</sup> European Commission.

Figure 5. Evaluation of Changes in EU Sustainable Transport (EU-27, from 2000)<sup>19</sup>

Level 1	Level 2	Level 3
 Energy consumption of transport relative to GDP	<b>Transport and mobility</b>	
	 Modal split of freight transport	 Volume of freight transport relative to GDP (*)  Volume of passenger transport relative to GDP
	 Modal split of passenger transport	 Investment in transport infrastructure : Passenger transport prices
	<b>Transport impacts</b>	
	 Greenhouse gas emissions from transport	 Average CO <sub>2</sub> emissions per km from new passenger cars (***)
	 People killed in road accidents (**)	 Emissions of NO <sub>x</sub> from transport  Emissions of particulate matter from transport

(\*) From 2004. (\*\*) From 2001. (\*\*\*) From 2007.

The table indicates many areas in which the system is not sustainable, including: in energy consumption, modal split, greenhouse gas emissions and safety. However, there are some areas in which the EU has met its goals, including in: volume of freight transport relative to GDP, NO<sub>x</sub> emissions and average CO<sub>2</sub> emissions. While the European Union has been able to establish a broad understanding of sustainable transportation as well as certain objectives and measures, it has not had sufficient progress. While sufficient progress is desirable, the European Union would not have been able to accurately measure its current progress without a clear conception of sustainable transportation.

<sup>19</sup> European Commission Eurostat. "Sustainable Development – Transport," European Commission Eurostat, accessed April 22, 2013, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Sustainable\\_development\\_-\\_Transport](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Sustainable_development_-_Transport).



## TRANSPORT CANADA AND THE CENTRE FOR SUSTAINABLE TRANSPORTATION

The second definition of sustainable transportation to be examined is that of Transport Canada. As indicated in Transport Canada's *Sustainable Development Strategy 2004-2006*, there has often times been reference to "sustainable transportation" without an accompanying definition. As the report indicates, "Although there is no single, commonly held definition of sustainable transportation, for the department the concept means that the transportation system, and transportation activity in general, must be sustainable on three counts – economic, environmental and social. Practically, this means ensuring that decisions are no longer made with the environment as an afterthought. Appendix C lists some of the existing definitions of sustainable transportation."<sup>20</sup>

Transport Canada identifies several guiding principles for a sustainable transportation system that reflect a desire to limit the use of natural capital and maintain a high quality of life:<sup>21</sup>

- Highest practicable safety and security of life and property
- Efficient movement of people and goods to support economic prosperity and a sustainable quality of life
- Respect for the environmental legacy of future generations of Canadians
- User pricing that better reflects the full costs of transportation activity and transportation infrastructure decisions that meet user needs
- Reasonable access to the national transportation system by Canada's remote regions

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<sup>20</sup> Centre for Sustainable Transportation. "Defining Sustainable Transportation." Prepared for Transport Canada, The Centre for Sustainable Transportation at the University of Winnipeg, 2005.  
[http://cst.uwinnipeg.ca/documents/Defining\\_Sustainable\\_20\\_05.pdf](http://cst.uwinnipeg.ca/documents/Defining_Sustainable_20_05.pdf).

<sup>21</sup> Centre for Sustainable Transportation.

- Accessibility in the national network without undue obstacles for persons with disabilities
- Coordinated and harmonized actions across all modes of transport; and,
- Partnerships and collaboration among governments and with the private sector for an integrated, coherent transportation policy framework.

While Transport Canada offers a number of guiding principles for sustainable transportation, the Centre for Sustainable Transportation offers a definition that centers on the three main dimensions of sustainability: economic growth, environmental protection and social equity. According to the Centre (which is located in Canada), sustainable transportation:<sup>22</sup>

- Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.
- Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy.
- Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production noise.

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<sup>22</sup> Centre for Sustainable Transportation.

Between the guiding principles presented by Transport Canada and the definition of sustainable transportation by the Centre for Sustainable Transportation, there is clear consistency in understanding. Within this understanding, economic growth, environmental preservation and social equity are specifically included with underlying components: economic growth includes efficiency and affordability; environmental preservation entails limiting emissions, waste and consumption of non-renewable resources; and, social equity involves meeting basic needs while maintaining public health. Thus, as a tandem, Transport Canada and the Centre for Sustainable Transportation provide the clearest and most defined understanding of sustainable transportation among all definitions.

## **TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES**

The Transportation Research Board of the National Academies (TRB) addresses sustainable transportation in the “National Cooperative Highway Research Program (NCHRP) Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies.” In the report, the guiding principle of sustainability is to meet “human needs for the present and future” while: preserving and restoring the environment; fostering community health; promoting economic development and prosperity; and, ensuring social equity.<sup>23</sup> The report asserts that sustainability is achieved by a comprehensive and multidisciplinary approach with participation by a wide variety of stakeholders at the federal, state, regional and local levels.<sup>24</sup>

The guidebook adopts the traditional environmental, social and economic dimensions of sustainability, viewing them as crucial to supporting human needs.<sup>25</sup> However, the most significant contribution to the sustainability discussion by TRB is not its recycled use of the three main sustainability dimensions; rather, its most significant contribution is the assertion that equity plays a major supporting role for each of the three dimensions. This assertion is demonstrated in the following figure.

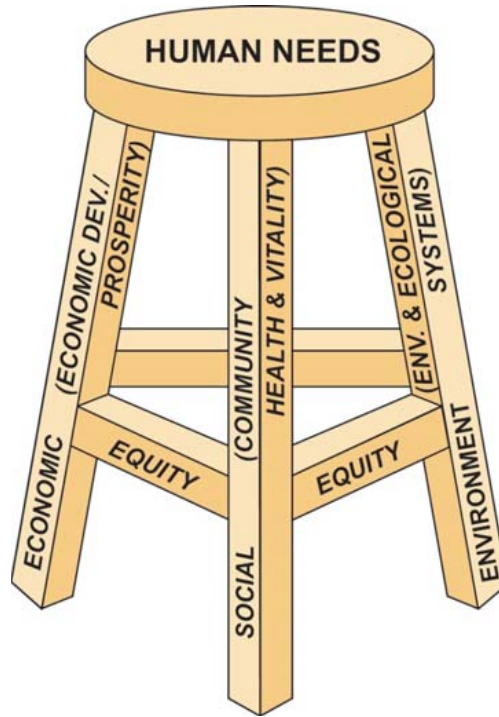
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<sup>23</sup> Transportation Research Board. “A Guidebook for Sustainability Performance Measurement for Transportation Agencies.” National Cooperative Highway Research Program (NCHRP) Report 708. [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_708.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_708.pdf).

<sup>24</sup> Transportation Research Board, 4-5.

<sup>25</sup> Ibid., 3-4.

Figure 6: Principles of Sustainability and the Significance of Equity<sup>26</sup>



As demonstrated by the figure, the main goal of sustainability is to fulfill human needs while being supported by strong economic, environmental and social pillars. The economic pillar includes development and prosperity, the social pillar includes health and vitality and the environmental pillar includes environmental and ecological systems. The unique trait of this conceptualization is that each pillar is supported by equity. This differs from other sustainable transportation definitions because equity is usually considered a social consideration, not an outside support to the three sustainability dimensions. In this case, equity is viewed as integral to all three sustainability pillars.

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<sup>26</sup> Transportation Research Board, 4.

## AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

In its 2007 report, “Transportation: Invest in Our Future,” the American Association of State Highway and Transportation Officials (AASHTO) adopts a triple bottom line approach to sustainability in transportation that includes: first, robust economic growth; second, improved quality of life for all citizens; and, third, better-than-before health of the environment.<sup>27</sup> “Robust economic growth” refers to delivering a “sustainable, high performance transportation system in support of a robust economy by first optimizing existing infrastructure, the reshaping demand, and lastly expanding judiciously.”<sup>28</sup> Additionally, “improved quality of life for all citizens” refers to enhancing “quality of life by integrating transportation with the built environment by using the full tool kit, including context sensitive solutions, land use policy, and diversified mode choice.”<sup>29</sup> Finally, “better-than-before health of the environment” centers on embracing “environmental stewardship as a preeminent approach to delivering transportation services that result in a zero carbon footprint.”<sup>30</sup> While AASHTO does include three dimensions of sustainability, its definition is slightly different with quality of life serving as one of the three dimensions, along with economic growth and environmental protection.

By employing the report’s three different sustainability dimensions, economic growth, environmental protection and quality of life, the Center for Environmental Excellence by AASHTO identifies a number of goals that should be included for a sustainable transportation system. The goals, which include considerations from each of the sustainability dimensions, are as follows:<sup>31</sup>

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<sup>27</sup> American Association of State Highway and Transportation Officials. “Transportation: Invest in Our Future.” March 2007. <http://downloads.transportation.org/tif2-1.pdf>.

<sup>28</sup> American Association of State Highway and Transportation Officials.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

<sup>31</sup> Center for Environmental Excellence by AASHTO. “Sustainability.” Accessed April 22, 2013. [http://environment.transportation.org/environmental\\_issues/sustainability/](http://environment.transportation.org/environmental_issues/sustainability/).

- Improve accessibility
- Improve mobility
- Improve safety
- Improve security
- Improve equity
- Improve affordability
- Reduce air pollution
- Reduce greenhouse gasses
- Use renewable resources at or below their rates of generation
- Use nonrenewable resources at or below the rates of development of renewable substitutes
- Appropriate land use
- Reduce noise pollution
- Maintain community cohesion
- Reduce ecosystem impacts
- Improve livability
- Improve public involvement
- Pricing that reflects true costs

While these sustainability goals are vast in scope, they do help elaborate on the many different policy level actions that support the definition of sustainable transportation. The Center for Environmental Excellence by AASHTO notes that each of these goals can be included in policies and programs at the project level, local level and regional level.<sup>32</sup> While AASHTO is not unique in taking a triple bottom line approach to sustainable transportation, it is unique in including quality of life as one of its three sustainability dimensions and for offering specific goals in each of those dimensions.

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<sup>32</sup> Center for Environmental Excellence by AASHTO.

## THE INTERAGENCY PARTNERSHIP FOR SUSTAINABLE COMMUNITIES

On June 16, 2009, the United States Department of Housing and Urban Development (HUD), the United States Department of Transportation (DOT) and the United States Environmental Protection Agency (EPA) agreed to coordinate all housing, transportation, environmental policies and investments under the Interagency Partnership for Sustainable Communities.<sup>33</sup> A stated focus of this new partnership was incorporating sustainability in transportation. As President Obama asserted at the announcement of the partnership:

By working together, [HUD, DOT, and EPA] can make sure that when it comes to development—housing, transportation, energy efficiency—these things aren’t mutually exclusive; they go hand in hand. And that means making sure that affordable housing exists in close proximity to jobs and transportation. That means encouraging shorter travel times and lower travel costs. It means safer, greener, more livable communities.<sup>34</sup>

As the statement by President Obama indicates, these three U.S. stakeholders are directed to work as a collective entity in addressing three different sustainability areas of transportation: first, quality of life, as indicated by housing; second, economic growth, as noted by the references to jobs and low travel costs; and, third, environmental preservation as represented by energy efficiency and greener communities.

While President Obama indirectly mentions sustainable transportation in his announcement, it is more directly addressed by the Partnership in its “Transportation Planning for Sustainability Guidebook.” In the report, sustainable transportation refers to “transportation that contributes to the sustainable development of the community that owns and uses the system,” or, more simply put, “transportation that promotes

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<sup>33</sup> United States Environmental Protection Agency, “Guide to Sustainable Transportation Performance Measures,” August 2011. [http://www.epa.gov/smartgrowth/pdf/Sustainable\\_Transpo\\_Performance.pdf](http://www.epa.gov/smartgrowth/pdf/Sustainable_Transpo_Performance.pdf).

<sup>34</sup> Partnership for Sustainable Communities: An Interagency Partnership. “Sustainable Communities.” Accessed April 22, 2013. <http://www.sustainablecommunities.gov/>.



sustainable development.”<sup>35</sup> While those definitions are simple and straightforward they contribute little to the understanding of sustainability in transportation.

While its own definition is rather ambiguous and weak, the same report does an excellent job at overviewing definitions put forth by other stakeholders, including: the New Zealand Ministry for the Environment, the Centre for Sustainable Transportation (Canada), the Organization of Economic Cooperation and Development (OECD), and several others.<sup>36</sup> Additionally, the guidebook overviews sustainability principles included in mission statements of state departments of transportation (DOTs) in the United States. Thus, while the report’s definition contributes little to the understanding of sustainable transportation, it serves as an excellent resource for other sustainable transportation definitions, mission statements and performance measures.<sup>37</sup>

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<sup>35</sup> United States Environmental Protection Agency, 6.

<sup>36</sup> Ibid., 7.

<sup>37</sup> Ibid., 8.

## **STATE DEPARTMENTS OF TRANSPORTATION (DOTs)**

By utilizing the analysis conducted by the Interagency Partnership for Sustainable Communities, sustainability elements in the mission statements of state departments of transportation (DOTs) can be examined. While the mission statements do not exactly provide clear definitions of sustainable transportation, they are still useful since they reveal underlying interpretations of sustainability in transportation by important many important planners and policymakers. As of 2011, 30 out of 50 states had incorporated sustainability principles in their mission statements. These mission statements can be found in “Appendix A: Sustainability in State DOT Mission Statements.”

While the mission statements vary in size and scope, there are some common, overarching themes and references. Among the sustainability elements repeatedly employed in the mission statements are: safety, efficiency, accessibility, economic growth, reliability, multi-modality, cost-effectiveness, environmentally sound and livable.<sup>38</sup>

Out of the 30 mission statements, Tennessee’s mission statement probably best encompasses the aforementioned sustainability elements. In its mission statement, the Tennessee Department of Transportation (TDOT) states its mission is “to plan, implement, maintain and manage an integrated transportation system for the movement of people and products, with emphasis on quality, safety, efficiency and the environment.”<sup>39</sup> All of those elements were commonly used by other states.

The most unique mission statement was that of Ohio. As the Ohio Department of Transportation (ODOT) mission statement articulates:

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<sup>38</sup> United States Environmental Protection Agency, 8-9.

<sup>39</sup> Ibid., 8-9.

Moving Ohio in a Prosperous New World. Its meaning encompasses the multi modal, safe, efficient and reliable character identified in our last business plan mission statement. At the same time, it incorporates the realization that safety, economic development, green, innovative and accessible characteristics are additional drivers needed to achieve the prosperity that will assure Ohio's future competitiveness.<sup>40</sup>

While the mission statement does include many of the common elements such as safety and economic development, it contains a strong business, Ohio-centric focus. In comparison to the representative mission statement, Tennessee, Ohio's mission statement is much more verbose and economic bottom-line driven. This point is not to argue for or against one mission statement or the other, but rather to show that there are significant variations of sustainability in the mission statements of state DOTs.

After examining the 30 mission statements, none of the sustainability elements in any of them are particularly surprising and groundbreaking. However, by examining these mission statements, a better understanding of how major transportation stakeholders address and view sustainability can be ascertained.

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<sup>40</sup> United States Environmental Protection Agency, 9.

## **Adopted Definition of Sustainable Transportation**

By examining the previous definitions of sustainable transportation, it is clear any definition must include economic, environmental and social dimensions. Furthermore, per the discourse on sustainability and sustainable development, sustainable transportation must also limit the use of natural capital while maintaining a quality of life above the minimum acceptable quality of life. By comparing the definitions of sustainable transportation provided by the European Union (EU), Transport Canada, the Transportation Research Board (TRB), the American Association of State Highway and Transportation Officials (AASHTO), the Interagency Partnership on Sustainable Communities, and the mission statements put forth by state departments of transportation (DOTs), a clearer, more universal definition of sustainable transportation can be drawn. The following table compares and synthesizes the key elements from the various definitions of sustainable transportation.

Table 1: Defined Elements of Sustainable Transportation

<b>Organization</b>	<b>Economic</b>	<b>Environmental</b>	<b>Social</b>
<b>EU</b>	Decoupling Economic Growth	Reducing Emissions and Energy Use	Reducing Noise Better Efficiency and Performance
<b>Transport Canada</b>	Economic Prosperity	Environmental Legacy	Safety & Security
<b>TRB</b>	Development & Prosperity	Environmental & Ecological Systems	Health & Vitality
<b>AASHTO</b>	Economic Growth	Environmental Stewardship	Quality of Life
<b>Partnership</b>	Jobs Affordability	Environmental Preservation	Housing Short Travel Times
<b>State DOTs</b>	Efficiency Development	Environmental Preservation Green	Safety Quality of Life

Drawing from the various elements including in definitions, objectives and mission statements, a working definition of sustainable transportation can be established. As most of the definitions include varying degrees of economic, environmental and social considerations, each of those dimensions should be included. Furthermore, the sustainable development goals of limiting use of natural capital and enhancing quality of life should also be included. Thus, for the purposes of this paper, sustainable transportation is transportation that directly addresses economic, environmental and social needs while limiting the use of natural capital and enhancing quality of life. Any transportation plans, policies or programs should meet the aspects included in this definition. In order to ensure a policy or program meets this definition, clear indicators or guidelines must be adopted or established.

## Sustainable Transportation Indicators

In order to gauge whether or not a transportation system fits the adopted definition of “sustainable transportation,” clear indicators must be adopted and established. For the purposes of this paper, there will be three different categories of indicators for each of the sustainable transportation dimensions (economic, environmental and social) that will be employed, largely drawn from the work by Litman and Burwell. The table below indicates several transportation impacts on sustainability in each of the three indicator categories.

Table 2. Transportation Impacts on Sustainability Indicators<sup>41</sup>

<b>Economic</b>	<b>Environmental</b>	<b>Social</b>
Accident Damages	Air Pollution	Aesthetics
Consumer Costs	Depletion of Non-Renewable Resources	Community Interaction
Depletion of Non-Renewable Resources	Habitat Loss	Community Livability
Facility Costs	Hydrologic Impacts	Human Health Impacts
Mobility Barriers	Water Pollution	Inequity of Impacts
Traffic Congestion		Mobility of Disadvantaged

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<sup>41</sup> Todd Litman and David Burwell. “Issues in sustainable transportation.” *Int. J. Global Environmental Issues*, Vol. 6, No. 4 (2006): 331-347. [http://gasfreenj.com/CTE\\_WEB/VPTI\\_SUSTAINABILITY.pdf](http://gasfreenj.com/CTE_WEB/VPTI_SUSTAINABILITY.pdf).

## **ECONOMIC INDICATORS**

In sustainable transportation, there are eight different economic indicators that vary in their ability to be measured. These indicators are: accessibility in terms of commuting, accessibility in terms of land use, accessibility in terms of smart growth, affordability, facility costs, freight efficiency, planning and transport diversity. These particular indicators should be used qualitatively assess the economic sustainability of transportation plans, policies and programs. The following table presents the aforementioned economic indicators along with their objectives and preferred direction.

Table 3. Economic Indicators in Sustainable Transportation<sup>42</sup>

<b>Objectives</b>	<b>Indicator</b>	<b>Direction</b>
Commuting	Average commute travel time	Less
Land Use	Number of job opportunities and commercial services within 30-minute travel distance of residents	More
Smart Growth	Implementation of policy and planning practices that lead to more accessible, clustered, mixed, multi-modal development	More
Affordability	Portion of household expenditures devoted to transport by 20% lowest-income households	Less
Facility Costs	Per capita expenditures on roads, traffic services and parking facilities	Less
Freight Efficiency	Speed and affordability of freight and commercial transport	More
Planning	Degree to which transport institutions reflect least-cost planning and investment practices	More
Transport Diversity	Mode split: portion of travel made by walking, cycling, rideshare, public transit and telework	More

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<sup>42</sup> Litman and Burwell, 335.



## **ENVIRONMENTAL INDICATORS**

For the second dimension of sustainable transportation, environmental, there are also seven different indicators that vary in their ability to be measured. These indicators are: climate change emissions, habitat protection, land use impacts, noise pollution, other air pollution, resource efficiency and water pollution. These particular indicators should be used qualitatively assess the environmental sustainability of transportation plans, policies and programs. The following table presents the aforementioned environment indicators along with their objectives and preferred direction.

Table 4. Environmental Indicators in Sustainable Transportation<sup>43</sup>

<b>Objectives</b>	<b>Indicator</b>	<b>Direction</b>
Climate Change Emissions	Per capita fossil fuel consumption, and emissions of CO <sub>2</sub> and other climate change emissions	Less
Habitat Protection	Preservation of wildlife habitat (wetlands, forests, etc.)	More
Land Use Impacts	Per capita land devoted to transportation facilities	Less
Noise Pollution	Portion of population exposed to high levels of traffic noise	Less
Other Air Pollution	Per capita emissions of 'conventional' air pollutants (CO, VOC, NO, particulates, etc.)	Less
Resource Efficiency	Non-renewable resource consumption in the production and use of vehicles and transport facilities	Less
Water Pollution	Per capita vehicle fluid losses	Less

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<sup>43</sup> Litman and Burwell, 338.

## **SOCIAL INDICATORS**

Like with the economic and environmental dimensions of sustainable transportation, there are eight different social indicators that vary in their ability to be measured. These indicators are: citizen involvement, community livability, equity in terms of fairness, equity related to considerations for the disabled, equity related to considerations for non-drivers, health and fitness, non-motorized transportation planning and, finally, safety. These particular indicators should be used qualitatively assess the social sustainability of transportation plans, policies and programs. The following table presents the aforementioned indicators along with their objectives and preferred direction.

Table 6. Social Indicators in Sustainable Transportation<sup>44</sup>

<b>Objectives</b>	<b>Indicator</b>	<b>Direction</b>
Citizen Involvement	Public involvement in the transportation planning process	More
Community Livability	Degree to which transport activities increase community livability	More
Equity- Fairness	Degree to which prices reflect full costs unless a subsidy is specifically justified	More
Equity- Disabilities	Quality of transport facilities and services for people with disabilities (i.e. wheelchair users, people with visual impairments and others)	More
Equity- Non-Drivers	Quality of accessibility and transport services for non-drivers	More
Health and Fitness	Percentage of population that regularly walks and cycles	More
Non-Motorized Transportation Planning	Degree to which impacts on non-motorized transport are considered in transportation modeling and planning	More
Safety	Per capita crash disabilities and fatalities	Less

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<sup>44</sup> Litman and Burwell.

## **The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21)**

In the United States, highway and surface transportation programs are currently funded under the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21). As the first long-term enactment since 2005 and with over \$105 billion allocated for (FY) 2013 and 2014, it encompasses numerous programs related to surface transportation.<sup>45</sup> Thus, in order to properly examine and qualitatively critique the sustainability of transportation in the United States, MAP-21 is an excellent piece of legislation to begin with.

Signed by President Obama on July 6, 2012, the two-year bill authorizes funding for federal transportation programs for two years. Below are some of the general policy and program components included in Map-21:<sup>46</sup>

- Funds federal transportation programs until September 30, 2014
- Funds highway, transit and bridge programs
- \$105 billion allocated for each year, accounting for inflation
- Guarantees a 95% return of federal gas taxes to states
- Transfers \$18.8 billion in general funds to maintain current levels of spending
- Maintains a 80%-20% funding split between highway and transit programs
- Eliminates or restructures 60 highway programs, with final authority left to the states

These points underscore the amount of funding and number of programs involved in MAP-21.

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<sup>45</sup> Federal Motor Carrier Safety Administration. "Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21)." Accessed April 22, 2013. <http://www.gpo.gov/fdsys/pkg/BILLS-112hr4348enr/pdf/BILLS-112hr4348enr.pdf>.

<sup>46</sup> National League of Cities, "Summary: Moving Ahead for Progress in the 21<sup>st</sup> Century (Map-21)." Accessed April 22, 2013. <http://www.nlc.org/Documents/Influence%20Federal%20Policy/Advocacy/Legislative/summary-map21-transportation-jul2012.pdf>.

As there are always strings attached to money provided by the federal government, such remains especially true with sustainability requirements. In MAP-21, there are clear allusions to sustainability. As MAP-21 clearly states:

Not later than 1 year after the date of enactment of this section, the Secretary shall begin development of new tools and improvement of existing tools or improve existing tools to support an outcome-oriented, performance-based approach to evaluate proposed freight-related and other transportation projects, including (ii) tools for ensuring that the evaluation of freight related and other transportation projects could consider safety, economic competitiveness, environmental sustainability, and system conditions in the project selection process.<sup>47</sup>

Additionally, MAP-21 states that environmental sustainability is meant “to enhance the performance of the transportation system while protecting and enhancing the natural environment.”<sup>48</sup> These statements are particularly significant as a main objective of MAP-21 is a transition to a performance and outcome-based program. Thus, under MAP-21, states invest in projects and programs to accomplish objectives that make progress towards natural goals, such as sustainability.<sup>49</sup>

However, based off of the previously reviewed definitions in this paper, there seems to be some confusion or lack of coherence in the definition of sustainability under MAP-21. In the first passage from the legislation, sustainability is mentioned with considerations to “safety, economic competitiveness, environmental sustainability and system conditions.”<sup>50</sup> This narrowly limits sustainability to environmental preservation, which as noted in earlier in this report, is a significant misunderstanding that limits the

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<sup>47</sup> Art Hirsch. “Map 21 An Opportunity for FHWA to Bring Sustainability to the Forefront.” *TerraLogic: Sustainable Solutions*. Accessed April 22, 2013. [http://terralogicss.com/\\_blog/Sustainable\\_Transportation/post/MAP-21\\_An\\_Opportunity\\_for\\_FHWA\\_to\\_Bring\\_Sustainability\\_to\\_the\\_Forefront/](http://terralogicss.com/_blog/Sustainable_Transportation/post/MAP-21_An_Opportunity_for_FHWA_to_Bring_Sustainability_to_the_Forefront/).

<sup>48</sup> Art Hirsch.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

ability of policies and programs to meet their stated objectives. Furthermore, there is little mention to social equity issues aside from safety. Thus, while MAP-21 strives to be focused on performance and outcome-based programs, it handicaps chances of success by not presenting a clear definition of sustainability in transportation.

## **CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ) PROGRAM**

One of the main MAP-21 programs is the Congestion Mitigation and Air Quality Improvement (CMAQ) program. According to the Federal Highway Administration, the Congestion Mitigation and Air Quality Improvement (CMAQ) program is designed to “support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief.” Originally created from the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, CMAQ has been reauthorized three times: first, under the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) in 1998; second, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A legacy for Users (SAFETEA-LU) in 2005; and, finally, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) in July of 2012. To date, CMAQ receives slightly over \$2.2 billion in funding for fiscal year 2013 and 2014.<sup>51</sup>

As a program, CMAQ provides funds for projects and other programs that work to reduce or control both transportation related congestion and emissions.<sup>52</sup> Funding is provided to state departments of transportation, municipal planning organizations and other transit agencies. To date, projects that qualify include: improvements in traffic flow, idle reduction equipment, the development of alternative fueling infrastructure and many other projects. While the current CMAQ program has been strengthened under MAP-21 with new environmental guidelines, it is allocating funds to state projects and programs with a limited understanding of sustainability, one that confines mainly to environmental considerations. Such an understanding limits the efficacy of allocations since it does not include economic and social dimensions.

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<sup>51</sup> Federal Transit Administration. “The Congestion Mitigation and Air Quality (CMAQ) Improvement Program under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users: Final Program Guidance.” Federal Highway Administration, October 2008. <http://www.fta.dot.gov/documents/cmaq08gd.pdf>.

<sup>52</sup> Hirsch.



## CONCLUSION

The Transportation Research Board of the National Academies identifies nine current and critical issues facing the United States transportation sector: congestion, environmental preservation, deteriorating infrastructure, inadequate funding, social equity issues, susceptibility to natural disasters, insufficient safety improvements, outdated government institutions and a lack of investment in innovation. In order to properly address these issues, a clear definition of sustainability must be established.

While numerous transportation stakeholders have presented definitions of sustainable transportation, there varying definitions and disagreements over sustainable transportation. The lack of agreement over a definition has directly affected the effectiveness of transportation plans, policies and programs, including the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) and its Congestion Mitigation and Air Quality Improvement (CMAQ) program.

In order to establish a clear definition of sustainable transportation, the definitions presented by the European Union, Transport Canada, the Transportation Research Board (TRB), the American Association of State Highway and Transportation Officials (AASHTO), the Interagency Partnership for Sustainable Communities and various state departments of transportation (DOTs). From identifying these definitions, a new working definition can be established, one that encompasses economic, environmental and social considerations with an emphasis on minimizing natural capital consumption and maximizing quality of life.

The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) is far from sustainable due to its incoherent definition. Thus, the following qualitative recommendations should be adopted to strengthen the sustainability of MAP-21:

- Adopt or establish a clear definition of sustainable transportation. As previously mentioned, sustainable transportation can be defined as transportation that directly addresses economic, environmental and social needs while limiting the use of natural capital and enhancing quality of life. MAP-21 currently limits sustainability to environmental preservation, which is a serious mistake that limits the effectiveness of policies and programs, at both the state and federal level.
- Broaden the Congestion Mitigation and Air Quality Improvement (CMAQ) program to encompass the broadened understanding of sustainability, especially in economic and social terms.
- Adopt or establish clear sustainable transportation indicators to accurately gauge the sustainability of programs and projects used by the states. The economic, environmental and social indicators adopted in this report provide a number of measurable objectives to ensure sustainability in plans, policies and programs. With the new sustainability indicators, projects and programs would simply provide evidence that they are meeting the desired outcomes for each indicator.

By incorporating the aforementioned qualitative and procedural recommendations, the Moving Ahead for Progress Act in the 21<sup>st</sup> Century (MAP-21) can actually move ahead for progress in sustainability and address the many critical issues currently facing transportation in the United States.

## Appendix: Sustainability in State DOT Mission Statements<sup>53</sup>

<b>State</b>	<b>Mission Statement</b>
Alabama	To provide a safe, efficient, environmentally sound intermodal transportation system for all users, especially the taxpayers of Alabama. To also facilitate economic and social development and prosperity through the efficient movement of people and goods to facilitate intermodal connections within Alabama. ALDOT must demand excellence in transportation and be involved in promoting adequate funding to promote and maintain Alabama's transportation infrastructure.
Arkansas	It is our mission to provide and maintain a safe, effective, and environmentally sound transportation system for the state.
Connecticut	To provide a safe and efficient intermodal transportation network that improves the quality of life and promotes economic vitality for the State and the region.
Delaware	To provide a safe, efficient, and environmentally sensitive transportation network that offers a variety of convenient, and cost-effective choices for the movement of people and goods.

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<sup>53</sup> Federal Highway Administration. "Transportation Planning for Sustainability Guidebook." Accessed April 22, 2013. [https://www.fhwa.dot.gov/environment/climate\\_change/sustainability/resources\\_and\\_publications/guidebook/sustain.pdf](https://www.fhwa.dot.gov/environment/climate_change/sustainability/resources_and_publications/guidebook/sustain.pdf).

Florida	Provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity and preserves the quality of our environment and communities.
Georgia	Provides a safe, seamless and sustainable transportation system that supports Georgia's economy and is sensitive to its citizens and environment.
Hawaii	To provide a safe, efficient, accessible, and inter-modal transportation system that ensures the mobility of people and goods, and enhances and/or preserves economic prosperity and the quality of life.
Iowa	Advocates and delivers transportation services that support the economic, environmental and social vitality of Iowa.
Illinois	To provide safe, cost-effective transportation for Illinois in ways that enhance quality of life, promote economic prosperity, and demonstrate respect for our environment.
Indiana	INDOT will plan, build, maintain, and operate a superior transportation system enhancing safety, mobility and economic growth.
Kentucky	To provide a safe, efficient, environmentally sound and fiscally responsible transportation system that delivers economic opportunity and enhances the quality of life in Kentucky.
Louisiana	To deliver transportation and public works systems that enhances quality of life and facilitate economic growth and

	recovery.
Maine	To responsibly provide a safe, efficient, & reliable transportation system that supports economic opportunity & quality of life.
Maryland	Efficiently provide mobility for our customers through a safe, well-maintained and attractive highway system that enhances Maryland's communities, economy and environment.
Michigan	Providing the highest quality integrated transportation services for economic benefit and improved quality of life
Mississippi	To provide a safe intermodal transportation network that is planned, designed, constructed and maintained in an effective, cost efficient, and environmentally sensitive manner.
Montana	To serve the public by providing a transportation system and services that emphasizes quality, safety, cost effectiveness, economic vitality and sensitivity to the environment.
Nebraska	We provide and maintain, in cooperation with public and private organizations, a safe, efficient, affordable, environmentally compatible and coordinated statewide transportation system for the movement of people and goods.
New Hampshire	Transportation excellence enhancing the quality of life in New Hampshire. Transportation excellence in New Hampshire is fundamental to the state's sustainable

	economic development and land use, enhancing the environment, and preserving the unique character and quality of life.
New Mexico	The primary responsibility of the agency is to plan, build, and maintain a quality state-wide transportation network which will serve the social and economic interests of our citizens in a productive, cost-effective innovative manner.
New York	It is the mission of the New York State Department of Transportation to ensure our customers-those who live, work and travel in New York State—have a safe, efficient, balanced and environmentally sound transportation system.
North Carolina	Connecting people and places in North Carolina –safely and efficiently with accountability and environmental sensitivity.
Ohio	Moving Ohio into a Prosperous New World. Its meaning encompasses the multi modal, safe, efficient and reliable character identified in our last business plan mission statement. At the same time, it incorporates the realization that safety, economic development, green, innovative and accessible characteristics are additional drivers needed to achieve the prosperity that will assure Ohio’s future competitiveness.
Oregon	To provide a safe, efficient transportation system that supports economic opportunity and livable communities for Oregonians.

Rhode Island	To maintain and provide a safe, efficient, environmentally, aesthetically and culturally sensitive intermodal transportation network that offers a variety of convenient, cost-effective mobility opportunities for people and the movement of goods supporting economic development and improved quality of life.
South Dakota	We provide a quality transportation system to satisfy diverse mobility needs in a cost effective manner while retaining concern for safety and the environment.
Tennessee	To plan, implement, maintain and manage an integrated transportation system for the movement of people and products, with emphasis on quality, safety, efficiency and the environment.
Vermont	To provide for the movement of people and commerce in a safe reliable, cost-effective and environmentally responsible manner.
Virginia	To plan, deliver, operate and maintain a transportation system that is safe, enables easy movement of people and goods, enhances the economy and improves our quality of life.
West Virginia	To create and maintain...a multi-modal and inter-modal transportation system that supports the safe, effective and efficient movement of people, information and goods that enhances the opportunity for people and communities to

	enjoy environmentally sensitive and economically sound development.
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