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Evaluation of profile of sustainable transport specialist in Mexico

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Abstract

On the one hand, the UN (2010) indicates that the transport sector is complex, as it involves the transfer of passengers and freight movement, at international, regional, national (between cities and between rural and urban areas) and local level; by water, air, land (road and rail) or a combination of these means. On the other hand, sustainable transport is defined by Hidalgo (2011) based on the work of Dalkmann and Huizenga (GEF-ATP, 2010) as: "the provision of infrastructure for the mobility of people and products needed to economic and social development, which provides secure, reliable, economical and affordable access, while reducing the negative impacts on health and the local and global environment, in the medium and long term".

It follows the urgent need to train technicians and specialists not only in transport as in previous years, but in sustainable transport, with the skills to meet the needs of the industrialized countries and the developing countries like Mexico. That is, it requires defining a profile of sustainable transport specialists that includes the skills needed to respond to the current problematic and one that is glimpsed in the short and medium term.

The aim of this paper is to present a research project focused on the evaluation of the profile of sustainable transport specialist in Mexico.

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1. Introduction

Transport plays a key and strategic paper in development of economic, cultural and social activities of any community, city, country or region. Transport services whether of goods or persons, in order to be considered with quality must possess features such as: security, accessibility, reliability, comfort and sustainability. This last feature has recently been recognized by international organizations (UN, OECD, IDB), as an important factor when seeking to measure the competitiveness of a city, country or region.

According to Sanchez and Wilsmer (2005) there is a positive relationship between providing the necessary transport infrastructure and economic growth of a place. It is for this reason that adequate infrastructure and effective and efficient transport services, are central to the productivity and competitiveness of a region and therefore, a key factor in economic growth.

Another important point to note is that, according to the OECD (2012) "countries need dynamic and competitive regions to achieve its economic and social objectives."

Key aspects of this approach to regional development include a development strategy that covers a wide range of direct and indirect factors affecting the performance of local companies, emphasizing the internal aspects of the region, recognizing the opportunities rather than the disadvantages and a collective and negotiated governance approach in which national, regional and local governments participate.

All these aspects can be applied to transportation systems in a region or country, for example, a more efficient transport allows companies to compete effectively in a world where time delivery of a good or service has become a competitive advantage for the company, and one of the most important factors in purchasing decisions customer; an improved design and a regulation and operation of local transportation systems allow access to the production centers to lower economic and social cost; furthermore the coordination of the different actors involved in providing transportation services is vital to the successful service provision. Also, through this collective governance, is possible to have a better transportation and a higher quality of live in the region.

On the line of regional development can be defined Sustainable Transport as “the provision of infrastructure for the mobility of people and goods necessary for economic and social development, which provides secure, reliable, economical and affordable access while reducing the negative impacts on health and the local and global environment, in the medium and long term” (Hidalgo, 2011).

A sustainable transport in a global economy, enabling significant advantages as employment generation, efficient use of natural resources, savings in travel times, reduced costs and better health for the people.

It is necessary to define a profile of sustainable transport specialists including competences to respond to the current problematic and one that is expected in short and medium term.

2. Background

The main transport trends raised in the document: Transport Outlook 2011 Meeting the Needs of 9 Billion People, prepared by the ITF-OECD (2011) include the following:

- The world population reached 6 billion in 2000, and in 2050 will approach 9 billion. Coupled with this, the mobility will expand strongly, if the infrastructure and energy it allows, will be 3 to 4 times the mobility of 2000, measured in passenger kilometers traveled; and 2.5 to 3.5 times the freight movement measured in tons-kilometers.
- The car ownership will reach peak levels. The projections in this area are uncertain and different for developing countries and industrialized countries, what is certain is that it will increase, in China, for example, is expected that less than 10 % today, switch to more than 50 % in 2050.
- Global CO2 emissions from the use of the car for 2050 it would be 2.5 to 3 times the emissions of 2000. In order to emissions from cars and light trucks remain at 2010 levels would require that the fuel economy will improve rapidly and strongly from 8 l / 100km in 2008 to 5 l / 100km in 2030 and less than 4 l/100 km in 2050.
- To radically decarbonize the transport, a large proportion of the vehicles would have to use alternative energy sources such as electricity, probably accompanied by changes in patterns of ownership and car use. Part of the strategy to initiate this change would be to subsidize the purchase of electric vehicles for public transport. In addition, vehicle manufacturers would need to have subsidies to invest in electric technologies.
Economic crises (such as 2008) and geo-political events may represent an obstacle to global economic growth, so the forecasts on the composition of trade flows are risky.

Emerging economies are the engine of global economic expansion post-crisis. However, the model of growth, especially in China, is based largely on exports. Given the weakening of export demand, the Chinese economy would have to resort to other sources of growth, for example domestic demand.

The tendencies mentioned above show a transport problematic, which occurs today and will worsen in the coming years. It is urgent implement the called sustainable transport but for it, is necessary to have specialists in it. Experts with the knowledge and the skills required to meet current and future challenges.

In the case of Mexico, the magnitude of the transport problem is such, that it has a great impact on society and the economy, and even though the federal, state and local governments have in their organizational structure several units that carry out different roles and responsibilities, and although transport is studied in undergraduate and graduate programs as well as in research centers and non-governmental organizations, is necessary to improve the preparation of professionals with the profile and level of expertise in sustainable transport to meet the demand of specialists both in quality and quantity to assume different positions in the public and private sectors.

For over 32 years, only one institution in the country (National Polytechnic Institute) had imparted a degree program in Transport Engineering, for its part, the Estado de México University (UAEM) recently has started a degree program in Transportation Engineering in its Academic Unit of Nezahualcoyotl, and a degree program in Logistics in its Academic Unit of Cuautitlan Izcalli. There are postgraduate studies at various universities in the country (Chihuahua, Nuevo Leon, Tamaulipas, Queretaro, Michoaacán, Distrito Federal, Estado de México, Puebla y Campeche) on specific topics such as ports, roads, traffic engineering, freight transport, logistics and transport planning and operation. In recent years the logistics has presented a greater interest in Mexico and have been initiated programs in this matter at undergraduate and graduate level in several public and private universities.

The UAEM has significant experience in training specialists in Transportation Engineering at postgraduate level, which dates back to 1982 with the beginning of specialization program in roads, and in 1987 with the specialty and master programs in Transportation Engineering within its Faculty of Engineering.

Given the national and global problematic in transport, comes the need to check the pertinence of the curricula on transport currently offered in the country and know if the demand in quantity and quality of sustainable transport specialists is satisfied.

It is known that this analysis is being carried out in different countries by the current effects of globalization, which makes the proposed project appropriate.

3. Objectives and methodology

The objective of this project is to evaluate the profile of sustainable transport specialist in Mexico, understanding as profile, to the set of skills and knowledge that the sustainable transport professionals must possess for solving the problems in their sphere of action.

The goals established in the project include determine the demand for sustainable transport specialists in the public and private sectors in Mexico; know the evolution of programs or careers about transport at undergraduate and graduate level mainly in Mexico, and in some leading countries in this field; and define the generic and specific competences of the sustainable transport specialist in Mexico.

To achieve the objective of this project, will be reviewed via Web the organizational structures of a sample of institutions from public and private sectors to identify areas that have implicitly or explicitly the need (or demand) of transport specialists; will be collected and analysed a sample of the curricula at degree and graduate level existing inside and outside the country; and will be applied the Delphi method and Experts Panel in order to obtain a forecast about profile orientation of the sustainable transport specialist in Mexico.

4. Results

Sustainable transport should have characteristics consistent with key aspects of sustainable development promoted by different international organizations, that is, present a reduction in the demand of transportation modes
of high emissions; increase mobility of people, goods and information; design an efficient transport around an intelligent planning of infrastructure and mobility, shift from energy-intensive modes towards more efficient modes (public transport and non-motorized transport); and reduce the environmental impact through the use of cleaner technology and better public policies.

To perform these actions is necessary to have sustainable transport specialists who have the aptitudes, abilities, skills and knowledge to apply ethically and responsibly new technologies and concepts in planning, design, operation, evaluation, financing, and legislation of sustainable transport systems according to the needs of each locality; to develop programs of conservation and efficient use of energy in the transport sector; to perform consulting activities in the area of sustainable transportation in public and private organizations; and to provide scientific and technological elements for the design of new sustainable transport systems.

However, due to the magnitude and complexity of transportation, it is impossible that an expert dominates the entire area so it is necessary that curricula on transport are restricted to a particular subarea; because on one hand, there are systems of land, air and water and the combination of these (multimodal transport); on the other hand, there is the transport of passengers and freight transport, and each has its own infrastructure, vehicles and operation. Also, it can be studied urban, suburban, regional, national and international transport, and can be analyzed the planning, design, operation, evaluation, financing, legislation and environmental impact (emissions, noise, congestion, fuel types, etc.). Considering the above, one could speak of a specialist in sustainable transportation? Or would have to speak of a specialist in sustainable rail transport? Or does a specialist in sustainable urban transport? It is necessary to define what should be the scope of a specialist in sustainable transportation.

The results of the determination of the demand of sustainable transport specialists, the offer of curricula at undergraduate and graduate level in Mexico and other countries, as well as from forecasts of sustainable transport obtained from the Delphi method and the Experts panel will allow among other things: the orientation, design and implementation of undergraduate and graduate programs in this area to satisfy the demand of sustainable transport specialists in the public and private sectors, which will result in a better allocation of natural, human, technical, economic and financial resources that involves the management and operation of transportation systems, and in the development of national science and technology in the priority areas of the Mexican transport.

References


