

Transport Decarbonisation Alliance

Training Program on Transport Decarbonisation



By the TDA Community of Interest Executive Education

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Background

Transport matters

Transport is the major sector off track to meet the commitments made at COP21 in 2015, with greenhouse gas (GHG) emissions still rising. The decarbonisation of the entire transport sector needs to accelerate on the path towards net zero-emissions by mid-century. Transport being a cross-cutting activity to the global economy, specific knowledge tools and skills are required by the future leaders so that the economies may incorporate transport decarbonising actions into their business models fostering a decarbonised and resilient transport sector.

Identified Challenges

The transition required to decarbonise the transport sector requires a new style of leadership, and mobility behaviours changes are needed, as stated in the TDA Manifesto. Stakeholders will face new challenges, requiring from professionals new advanced skills which are not properly covered by the classical "silo-type" programs on Transport, Environment and Finance, available from higher education institutions.

Decision makers will face, more and more often, complex challenges. Some typical examples include:

- A company plans to make a strategic investment on logistics (fleet & energy use);
- A city hall wants to develop a low-carbon strategy for mobility;
- A transport ministry wants to pass a law on shared mobility;
- A national government wants to evaluate a new model of mobility taxation;
- A bank wants to prepare a new funding offer for green transport.

Transition is possible through a virtuous combination of contributions from:

- Private sector (innovation-driven)
- Local governments (economy & quality of life-driven)
- National governments (public interest-driven)

The opportunity

There is a need to develop a specific offer on executive education, addressed at active professionals and graduate students who want to become leaders in a field that, in the short term, will be ubiquitous across all economic sectors, anywhere in the world.

TDA is in an excellent position to take forward this opportunity as it includes the right combination of expertise, coming from national governments, cities and companies. TDA members operate on both the demand and the solutions sides. In association with reference Academia/Research institutions, TDA developed a "TDA Executive

Curriculum on Transport Decarbonisation", which could be replicated in different geographies, partnering with other world class schools, thus maximising the impact. Additionally, the TDA Executive Curriculum on Transport Decarbonisation is a powerful vehicle for the dissemination of the TDA principles and the transport decarbonisation acceleration, especially in regions like Africa, Asia, South America and elsewhere there is a real awareness of the need for advanced executive education in the transportation sector.

Training Program Format

Aiming to maximise the Executive program impact, the TDA Community of Interest (CoI) set up the following format base line for the Executive Education Program:

- A Short and flexible program pointed to fill in the educational gap on transport decarbonisation, including near-term opportunities for short-course professional education.
- A Post-graduation training program structured in such way that some parts of the Program could be included in other e.g. grad level Programs.
- Leadership-policy maker-strategy-decision maker oriented including technical concepts missing from the current education of some professionals as part of the syllabus.
- Blended On-line / On-site with get together joint sessions for case study and students papers discussion.

Target Audience

The Target audience for the Executive Program includes both corporate and governmental leaders, policy makers, strategists and decision makers (it is not specifically directed to engineering technicians).



Curriculum

The Training Program curriculum was developed by the TDA Col with the kind support and assessment of several universities in Europe, USA and Asia.

This curriculum content is to be detailed by each one of the universities adopting the TDA Training Program. The TDA provides support and teaching experts on a case by case situation.

Core Learning Outcome

The objective of the TDA Training Program is to provide trainees with:

- A structured understanding of both key technical/non-technical challenges and solutions, that the private and public sectors need to address to successfully decarbonise mobility and transport.
- Selected case-study references enabling trainees to rethink professional (and personal) transport-related activities and to engage in the profound transformation of mobility and transport.

Training Program Structure

The TDA Training program basis was structured in a blended online / onsite mode. It is based on nine online 3-hour modules (with extra learning time) and one onsite one-week module, estimating a total of 75 hours of work load.

	Module	Teaching time	Extra learning time	Online / Onsite
1	Policy framework for transport and climate change	3 hr	2 hr	Online
2	Urban multimodal mobility I (overview)	3 hr	2 hr	Online
3	Urban multimodal mobility II (public transport)	3 hr	2 hr	Online
4	Urban multimodal mobility III (walking and cycling)	3 hr	2 hr	Online
5	Urban multimodal mobility IV (new mobility systems)	3 hr	2 hr	Online
6	Low carbon mobility for low density and rural areas	3 hr	2 hr	Online
7	Decarbonised freight transport and supply chain	3 hr	2 hr	Online
8	Renewable energy for transport	3 hr	2 hr	Online
9	Management of electric mobility	3 hr	2 hr	Online
10	Rethinking your business approach & paper development	5 days 30 hr		Onsite
	TOTAL		75 hr	

Options for Program delivery are:

- Concentrated (2 weeks)
- Extended (5 weeks)
- Other periods according to online learning trainee rhythm

The Programme is, however, adjustable according to the needs and requirements of partner Universities. The 10 Modules could be split and adopted separately as required, as well as the online / onsite modes. Although onsite mode is vastly preferable in many ways, there are also some advantages on doing a carefully managed video-conferencing approach (or a blend of in-person and videoconferencing). Specifically, when aiming at a more diverse and large set of students with less travel availability, thus modelling low-carbon behaviour.

Modules description

In depth description can be found attached, including syllabus short content and references for each Module.

Module 1. (Online) Policy framework for transport and climate change

The trainees will be provided with a simple timeline of major scientific and policy actions related to climate change and an understanding of, among other agreements, the Paris Agreement objective and implications along with other international agendas such as the implementation of the 2030 UN Agenda for Sustainable Development.

This is an introductory module focusing on the global framework of mobility and transport, including global policy for transport and climate change, regulations, international agreements and global trends.

Module 1 will include a set of core principles of themes that could be used to assess proposed decarbonization activities such as public acceptance, acceptance by political elites and differentiated cost/economic impact to individuals, companies and governments.



Module 2. (Online) Urban multimodal mobility I (overview)

Urban multimodal mobility is of primary importance for economies, as it is estimated that close to almost all global trade originates from, traverses or is destined for a metropolitan area, which act as major hubs in the global goods distribution network¹ and population mobility.

In 2018, an estimated 55.3 per cent of the world's population lived in urban settlements. By 2030, urban areas are projected to house 60 per cent of people globally and one in every three people will live in cities with at least half a million inhabitants². Understanding the key trends in urbanization likely to unfold over the coming years is crucial to rethink the urban multimodal solutions to make cities and human settlements inclusive, safe, resilient and sustainable.

In this Module students will become aware of the different modes of transport and the carbon emissions implications of each (walking, bicycling, passenger cars with multiple occupants, passenger cars with just one traveller, bus, train, plane, etc.). The module will present different metrics for measuring carbon emissions impact (emissions per mile, per trip, per passenger mile, etc.).

Module 3. (Online) Urban multimodal mobility II (public transport)

The world's cities are growing in both size and number. Public transport is a major tool to decrease the personal transport usage and thus a major contributor for transport decarbonisation.

Several innovative solutions are increasingly being used not only to capture more public transport demand, but to decrease the impact and emissions of public transport.

Trainees will become familiarised with the latest trends on public transport policy and strategies.

Module 4. (online) Urban multimodal mobility III (walking and cycling)

Active mobility (walking and cycling) is becoming a very important solution for both solve traffic issues and increase public health. Creative ideas and practical case studies will be shown to the trainees to provide them with consolidated vision over this important mobility resource.

¹ RPA-VREF (June 2016) Why Goods Movement Matters

² http://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf

Module 5. (online) Urban multimodal mobility IV (new mobility systems)

In 2018, 1.7 billion people — 23 per cent of the world's population — lived in a city with at least 1 million inhabitants. In 2030, a projected 28 per cent of people worldwide will be concentrated in cities with at least 1 million inhabitants. This will generate loads of traffic and mobility individual needs. New mobility systems such like car sharing, bike sharing, and others are becoming a popular way for people to move around in the cities. What are the pros and cons of this solutions? What is the business behind these systems and how can they improve transport decarbonisation?

Trainees will be provided with an overview on these and other relevant questions on new mobility systems.

Module 6. (online) Low carbon mobility for low-density and rural areas

Between 2018 and 2030, the urban population is projected to increase in all size classes, while the rural population is projected to decline slightly. Rural areas were home to 45 per cent of the world's population in 2018, a proportion that is expected to fall to 40 per cent by 2030.³ Thus, the rural areas require different mobility options. Nevertheless, they are an important issue to be tackled in order to transform society into transport decarbonisation.

Students will have a deep understanding of the major challenges and options available, as well as innovative solutions and technologies that will contribute to raise the awareness for the rural and low-density areas transport and mobility.

Module 7. (online) Decarbonised freight transport and supply chain

Vehicles-kilometres for urban freight currently account for half of total road freight and are expected to grow further⁴. Indeed, urban freight is impacted by fast urbanization trends and the increase in direct delivery of products to households through e-commerce.

Additionally, urban freight is responsible for a substantial share of CO₂ emissions. Indeed, while goods transport in cities accounts only for around 18 to 25% of vehicle travel and 10 to 18% of vehicle ownership, it causes 20 to 40% of urban transport CO₂ emissions as well as 30 to 50% of air pollution (such as particulate matter (PM) and nitrogen oxides (NOX))⁵. It has therefore become a major public health concern. Indeed, the World Health Organisation estimates that 4.2 million deaths worldwide are caused by outdoor air pollution⁶.

Resulting from the TDA Community of Interest Urban Freight, several case studies will be provided to the students, together with an overview on the major supply chain decarbonisation tools.

³ http://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf

⁴ ITF (2017) ITF Transport Outlook 2017

⁵ Smart Freight Centre (2017) Developing a Sustainable Urban Freight Plan – a guide

⁶ <http://www.who.int/airpollution/en/>

Module 8. (online) Renewable energy for transport

Module 8 will include energy management in cities (smart grid, energy efficiency in buildings, transport interface and environment variables to be considered).

Module 9. (online) Management of electric mobility

Electric mobility is one of the major solutions to dramatically reduce transport decarbonisation. But this option requires both public and private coordinated investment for a quick and successful deployment. The trainees will become aware of several case studies revealing challenges and opportunities for the future decarbonisation of Transport and Mobility.

Module 10. (onsite) Rethinking your business approach & paper development

Students are to prepare a final paper to be presented and discussed together with the class and teachers during the get together joint session.

Additional support will be provided to the student during the Final paper task. Training format considers guided help to support students in transforming their organisation and developing their own project paper. TDA experts and "alumni" from previous classes come to Module 10 to offer advice and support, either in-person as visiting experts or online video-conferencing visit.

The financial dimension is included in Module 10 along with cost effectiveness decision tools and financial and economic analysis for transport options considering decarbonising factors. Students end the module with new professional contacts they can rely on for help with decarbonization projects over time.

Soft skills, change management, inspiring leadership and communication training are also included in the students' support (for the Final paper presentation) in this Module.

Syllabus of Modules

The TDA Training Program modules' syllabus are on a separate detailed document and were developed by the Community of Interest on Executive Education of the Transport Decarbonisation Alliance with the assessment of the Academic Expert Group.

Syllabus include fundamentals, case studies, and references, but it is not the Program detailed content. For the TDA Training Program content please get in touch with the adopting Universities (TDA partners).

Deployment Model

The TDA Transport Decarbonisation Course has the ambition to widespread the knowledge and information about the transport decarbonisation effects and requirements. Thus, the objective of the course deployment is to achieve as most audience as possible and so the course will be released through two packages of knowledge:

Pack 1. This contribution from the TDA to the Global community

These online documents are the direct outcome of the Col Executive Education containing the short syllabus of the 10 Modules, jointly built by the Col members and Academic Experts contributors. It is released in the TDA website and to be periodically updated, free of charge for everyone interested.

Pack 2. Bespoke Transport Decarbonisation Course with partner academic institutions

Based upon the produced syllabus, the TDA and partnering Universities will further develop teaching materials, adjusted to a case by case situation, starting from a 3 to 5 days course to be offered by the TDA to partner universities, either as a standalone course or as an option to be integrated in an MBA course (or other options according to the partnering University requirements, including online / onsite mix), with the TDA label and TDA members offered as part of the teaching team. Interested Universities should contact the TDA for more information eventually envisaging a partnership arrangement.

Alumni Network

The students will be in contact with other students and professionals from the TDA Transport Decarbonisation course as well as with "alumni" from previous classes, thus building a network of alumni with new professional contacts they can rely on for help with decarbonization projects over time.

Alumni will be part of the TDA contacts list and will regularly receive publications and relevant information about transport decarbonisation challenges, solutions and trends. Moreover, they will be personally invited for TDA specific events and meetings where they can further exchange contacts and knowledge with the TDA experts and other supporting organisations.

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