

Khaldoun Karraz

Ph.D. in Civil Engineering

International Expert in Rail and Urban Transport Systems



1. Family name: **Karraz**
2. First names: **Khaldoun**
3. Date of birth: **06/06/1976**
4. Nationality (passport holder): **French**
5. Place of residence: 8 Rue d'Aligre, Paris 75012, France
6. Mob. 0033695933203 // Mail: khaldoun.karraz@bureauveritas.com , khkarraz@yahoo.com
7. Education:

<https://bridgingtransportgap.com>

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
Ecole Nationale des Ponts – Paris Tech, ENPC. Paris, France. (2019-2020)	Advanced Master in Railway and Urban Transport System Engineering - Qualification listed RNCP Level 1 International Expert in Rail and Urban Transport Systems
University Paris Est / Ecole Nationale des Ponts et chaussée, Paris). (2004-2008)	Ph.D. in Civil Engineering; Urban and Rail Infrastructure (Planning, Design & Construction)
University of Marne la Vallée, Paris and 'National University of Bridges and Roads, (Ecole Nationale des Ponts et Chaussées, Paris (2003-2004)	Master of Science, DEA (Diplôme d'Etudes Approfondies), Mechanics of Solids, Materials and Structures / Option: Mechanics and Structures.
Damascus University, Damascus - Syria (2000-2001)	Diploma in Superior Studies, DES: (Diplôme d'Etudes Supérieures) Transportation and Infrastructure Engineering
Damascus University, Faculty of Civil Engineering, Damascus, Syria (1995-2000)	Bachelor's degree in civil engineering, Transportation & Communication

8. Main Achievements:

● In France:

- **RATP Paris Métro: my study about main adaptation plan for Paris-metro lines infrastructure as part of the new arrival of MF19 Rolling stock:** I have Proposed guidelines for the capitalization of program design studies and Adapt rolling stock maintenance centers and maintenance workshops.
- **AFD French Development Agency & case study at the University of East London: Railway project: Design of a mixed railway line between Ecuador and Peru (Length ≈ 4000km) and by BIM method):**
1- <https://bridgingtransportgap.com/articles/view/20/En>
2- <https://www.linkedin.com/feed/update/urn:li:activity:7034549855767142400/> .
- Master Plan for "Soft Mobility" – Pedestrians and bicycles in big cities; with Practical & Methodological Guidelines for SOFT MOBILITY PLAN: <https://bridgingtransportgap.com/articles/view/21/En>
- L'évolution de la régulation institutionnelle et législative des transports urbains en France // Étude de cas: Le Grand Paris Express/ Provincial trains: <https://bridgingtransportgap.com/articles/view/19/En>
- **Guidelines for Tram-Train French criteria for choosing this model and the technical characteristics:** <https://bridgingtransportgap.com/articles/view/15/En>

● In Lebanon:

- **An assessment of Strategic Role Tripoli Port -Syrian Border for Railway Project:** This study is based on the analysis of the current situation as well as the identification of flows distribution, and the spatial coverage of the rail system regarding freight transport and the serviceability of industrial and maritime sectors as well as passengers. The analyses include the new traffic attracted and the level of service.
- Creatig and preparation the Strategy of Land Transport Sector, and supporting the implementation the road and railway and urban transport sectors in Lebanon;
- Drafting General Guidelines and Design Regulations for BRT /BHLS/ BHNS, comparative study of French and American standards: 1- <https://bridgingtransportgap.com/articles/view/11/Ar>
2- <https://bridgingtransportgap.com/articles/view/16/En>

• **In Syria:**

- **Government Supervisor and Monitor of the feasibility of Damascus subway (Metro) & SYSTRA (France):**
 - Follow-up of tasks completion, evaluation of scenarios and validation of proposed scenarios paths of Metro line.
 - Verification of traceability (longitudinal section and cross-section) in accordance with adopted standards, regulation and TOR. Validation of reports.
- **Planner & Designer for implementation Homs tramway program (8 km):** track, stations, maintenance program, operation standards. Feasibility study, design study and tramway's integration in the city center of Homs in Syria. <https://bridgingtransportgap.com/articles/view/13/En>
- **QANTARAIL Project, the main assignment tasks were related to database analysis and to Syrian railway network by traffic modelling: for two horizons (2015 & 2025).** To improve the performance of Syrian rail-network and ports, furthermore to enlarge their hinterland in order to cover Iraq and GCC countries.
- **Transforming the Iraqi Route for Development into the New Promoter for Regional Advancement in the Middle East (Study in BIM method in 2023 for Syrian Ministry of Transport):** <https://www.linkedin.com/feed/update/urn:li:activity:7077195706012184576/>
- **Master Plan of Damascus City and its vital surrounding: the main responsibilities are:** Supervision & Monitoring of field surveys (traffic, road network, public transport). Validation of traffic modelling results.
- **As Syrian national Expert for (CETMO) Act.18, was in charge of traffic modeling of goods and passengers routes;** for main corridors (Rail, Road and Maritime) between Europe, MENA and the GCC countries. Flows analysis, routes evaluation, and proposal of adequate scenarios which could serve regional and Mediterranean integration.
- I have achieved significant accomplishments in formulating and implementing laws, decrees, and regulatory texts in the transport sector in Syria.
 - One of my notable achievements was creating and conducting studies that led to the issuance of two legislative decrees (N°. 43 and N°. 212 of 2010), which encouraged the acquisition of electric and hybrid cars by reducing taxes;
https://www.ortas.online/index.php?id=100060&id=68097&cf_chi_tk=tG4HE.1UJoSWdALpkwJrOAA2drQwRTPzSM9LnAxro74-1683626702-0-gaNycGzNDBA
 - I introduced a new vision for the Middle East with the implementation of Decree N°. 75 of 2010, replacing the annual fee for licensing gasoline vehicles with a fee on fuel consumption. This law linked the annual vehicle fee to the vehicle's activity and engine capacity simultaneously, promoting environmentally friendly cars (gas-electric-hybrids) and encouraging the use of mass transit, public transport and encourage to use the soft mobility.
<https://www.mot.gov.sy/apps/library/download/?id=119>
- Working to implement a Bus Rapid Transit (BRT) system in Damascus (2011), through an innovative process. BRTxpress, to develop an "**Ultra Low-Cost**" **BRT solution** which focuses on using local teams guided by international expertise and benchmarking to develop low cost solutions in emerging countries.

9. **Researches & Proceedings of international conferences**

- H. Almujiabah, K. Karraz et al, «A Comprehensive Analysis of Turnout, Switching, and Nonlinear Control Technique to Enhance Safety, Efficiency, and Capacity in Hyperloop». IEEE Access, 153127- 153145, 2024, 10.1109/ACCESS.2024.3472857, IEEE Access, SN - 2169-3536, VO- 12, VL – 12.
- Khaldoun Karraz, Jean-Claude DUPLA, Jean CANOU, and Guy BONNET, Mechanical Behaviour of Micro ballast Under Monotonic and Cycle Triaxial Loadings, International Workshop; Railway Track, Ballast: Issues and Challenges – UIC - Paris – FRANCE -2013.
- Khaldoun Karraz, Adopted Measures in Syrian Arab Republic for Reducing Transport Sector Emissions, Expert Group Meeting on "Promoting Emissions Reductions in the Transport Sector", UN- ESCWA (ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA), Beirut, LEBANON - 2011
- Khaldoun Karraz, et al; «Comportement Irréversible des Matériaux Granulaires des Plateformes Ferroviaires Soumises aux Charges Uniformes et Répétées » Paper ID No. 1053, 14th Pan-American Conference on Soil Mechanics and Geotechnical Engineering 64th Canadian Geotechnical Conference, Toronto, CANADA- 2011.
- Khaldoun Karraz, « Comportement d'un Micro-Ballast aux Grands Nombres de Cycles », journée CFMS : géotechnique ferroviaire CNAM de Paris –FRANCE -2009
- Khaldoun Karraz, and al. « Dispositif Triaxial Dynamique de Grande Taille Pour Sols et Matériaux Grossiers ». Journées Nationales de Géotechnique et de Géologie de l'Ingénieur JNGG'08 - Nantes- FRANCE - 2008
- Khaldoun Karraz, «Influence of Sample Size on Mechanical Behaviour of Granular Materials», 60thCanadianGeotechnical Conference, Ottawa CANADA-2007

- K. Karraz, «Comportement Cyclique a Long Terme de Matériaux de Ballast», Conference on Advanced Characterization of Pavement and Soil Engineering Materials –GRECE 2007.
- K. Karraz, « Détermination des prospérités cyclique et dynamique du ballast et la modélisation de structures en matériaux granulaires par approche continue », Colloque Matériaux Granulaires – ENPC - Paris FRANCE - 2007.
- K. Karraz, The Procedures to Propose Costly Transport Projects with BOT, Demonstration with French highways Expertise. 3rd Jordan International Transportation Conference; Decision Making in the Transport Sector, Amman Jordan, March 2007.

10. Book or chapter

Karraz K., Bonnet G., Dupla J.C., Canou J., Mechanical behavior of ballast under monotonic and cyclic loading, in « advanced characterization of pavement and soil engineering materials », pp. 1874-1856, ed. by Loizos, Scarpas and Al Qadi, Taylor & Francis (06/2007). ISBN 0415448824.

11. Language skills: Indicate competence on a scale of 1 to 5 (1 - Excellent; 5 - Basic)

Language	Reading	Speaking	Writing
Arabic	1	1	1
French	1	1	1
English	1	1	1

12. Other skills: Computer Skills Visual basic, Matlab - CESARLcpc- Microsoft Office, AutoCAD, BIM with InfraWorks, Google Earth Pro and CIVIL3D. MS Project, Primavera - Arc GIS/ GIS Pro, VISUM, Origin 7

13. Membership of professional bodies:

- Member of the French Railway Association of Engineers and Managers (AFFI) - since 2019
- Member of the Order of Engineers of Syria since 2000 - Engineer-in-office function (2008)

14. Trainings:

- 05/2011 - 06/2011: Course, Big cities and sustainable development, ENA (Ecole Nationale d'Administration), **Paris, France**
- 06/2010 - 07/2010: Course, Financial and economic cost-benefit analysis for transportation projects, National Institute of Transportation, **Cairo, Egypt**
- 05/2001 - 11/2001: Course, creation the strategic plan for Land Transport Company, in Syrian - Jordanian land transports company, **Amman, Jordan**
- 02/2001 - 03/2001: Course, the construction and setting up of transportation foundations using the BOT and PPP system - National Institute of Transportation, **Cairo, Egypt.**

15. Studies In Arabic:

Studies Prepared in the Studies Department at the Ministry of Transport in SYRIA (2009-2013):

- **Electric cars:** proposals to support their local spread (Syria) considering global experiences.
- **Hybrid cars:** incentives to encourage the spread of environmentally friendly cars.
- **Syrian railways network** analysis of the current situation and future predictions for volumes and capacity.
- **GPS technology** and installation procedures in Syria.
- **Biofuels** and their impact as alternative fuels in the transport sector.
- **Tachograph:** speed measuring device and installation requirements in Syria.
- **Durability and safety** requirements for tourist cars.
- **Guidelines for Designing the road noise barriers.**
- **Electronic data interchange (EDI)** technology and its applications in the transport sector.
- **Guidelines for designing a dedicated bus line BRT** express at ultra-low- cost.
- **The harmful effects of gas emissions on humans, nature, structures,** and cities and the role of the Ministry of Transport in reducing gas emissions in the Syrian Arab Republic/ UN - ESCWA - LEANON
- **Durability requirements and safety tests for cars:** a comparative study between Syrian and Saudi standard specifications.
- **Gas-powered cars & transition methods:** advantages of converting cars to run on gas and the national technology requirements.

About 20 articles on these studies have been published in local newspapers, scientific, economic and technical journals.

16. Professional experiences:

Date from – to	Location	Company	Position	Description reference person (name & contact details)
04/2024 - to date	Riyadh - SAUDI ARABIA	Bureau VERITAS & National Center for Environnemental Compliance (NCEC)	Land Transport Environmental Expert	<p>Environmental Performance Assessment Project for Land Transport and Logistics Sectors: The project aimed to align the sector with international environmental standards and Vision 2030:</p> <ul style="list-style-type: none"> - Environmental Impact Assessment: Evaluated the environmental impact of urban and rail systems, and proposed solutions for emission reduction. - Data Coordination: Collaborated with relevant authorities to gather data and ensure alignment with global standards. - Strategic Planning: Developed a comprehensive national plan to monitor and ensure environmental compliance across Saudi Arabia, addressing both the current state and the desired future goals. <p>Ref. Eng. Elias Fahd: elias.fahd@bureauveritas.com; BIO Manager Bureau Veritas Saudi Arabia</p>
03/2023 - 03/2024	Amman JORDAN	EGIS International / Sitram Consultants	Public Transport Specialist	<p>National VISUM Transport Model Re-assess public transport needs, assess public transport ridership, assess public transport routing, assess future public transport route scenarios (Example: BRT, metro, rail and feeder buses).</p> <p>Ref. Eng. Rayan Wehbe rwehbe@sitramconsultants.com . Transport Key Expert: Team Leader</p>
03/2020 - 02/2023	Paris France	RATP Paris Metro	Engineer	<p>Main adaptation plan for metro line infrastructure as part of the arrival of MF19 Rolling stock:</p> <ul style="list-style-type: none"> • Propose guidelines for the capitalization of program design studies • Adapt rolling stock maintenance centers and maintenance workshops <p>Ref. Guillaume Le Mandat: guillaume.le-mandat@ratp.fr – RATP Infrastructure - Head of the Projects Management unit</p>
04/2014 - 04/2019	LEBANON	SISSAF & TMS consult Project funded by the European Union	Senior Transport Expert	<p>- Comprehensive Sector Policy and Strategy for the Lebanese Land Transport Sector: participation and preparation the Strategy of Land Transport Sector in order to strengthening of the Institutional Capacity and Capacity building of the Sector, and support and enhance the implementation the road and railway and urban transport sectors in Lebanon.</p> <p>- Assessment of Strategic Role Tripoli-Syrian Border Railway Project: Based on the analysis of the current situation as well as the identification of flows distribution, and the spatial coverage of the rail system regarding freight transport and the serviceability of industrial and maritime sectors as well as passengers.</p> <p>- Creation the general Guidelines for BRT (BHNS) and Dedicated Busway: Comparison study (American and French standards), to introduce current concepts and ideas on the BRT / BHNS, provide the planners and designers, and consider procedures for adapting to major cities in Lebanon.</p> <p>Ref. Xanthakos Georgios: gexanth@yahoo.gr - Transport Key Expert: Mott MacDonald Romania SRL</p>
09/2013 - 03/2014	Nantes FRANCE	Ecole Centrale de Nantes	Senior Transport Researcher	<p>Analysis of railway infrastructure behavior. Evaluation of impacts on specific loads and optimization of concept design for heavy loads (analyzing big data and modeling).</p> <p>Ref. Prof. Guy BONNET, Professor at Paris-Est University MLV- France, guy.bonnet@univ-paris-est.fr</p>

07/2009 - 07/2013	Damascus SYRIA	Ministry of Transport Syria	Head of department - Director General	Department of transportation studies, research & Environmental Affairs. Team leader of several studies and national projects including feasibility analysis, environmental impact, sustainable urban mobility policy, traffic analysis & surveys, coordination with stakeholders and elaboration of implementation plans. Monitoring and completion of several studies (transformation and adapting new technology ITS): CNG bus, The Syrian railway network development, Hybrid and Electrical vehicles, GPS, BRT-express Ultra-low-cost, design Tramway and underground...). With the preparation of tender dossiers and Impact assessment of transport projects. Ref. Minister former, Regional advisor on transport, UN -Escwa - Lebanon, Dr. Yarob Badr, badr3@un.org
12/2009 - 12/2012	Damascus SYRIA	Consulting Bureau and Engineering Works Damascus University	Railway Engineer	Detailed design study with execution drawings for the Railway Line between EL- DOMEIR and EL-KABOUN Damascus Stations New Double Railway (80 Km. long): track, station, maintenance program, with the international specifications UIC and European specifications CEN. Design and Verification the traceability (longitudinal section and cross-section) in accordance with the code of regulations of construction (UIC).
04/2009 - 06/2011	Damascus SYRIA	Ministry of Transport	National expert & coordinator of Syrian committee for Damas Métro	Supervision & Monitoring of feasibility study of Damascus subway (Metro) – SYSTRA (France): Follow-up of tasks completion, evaluation of scenarios and validation of proposed scenarios paths of Metro line. Verification of traceability (longitudinal section and cross-section) in accordance with adopted standards, regulation, and TOR. Validation of reports: -- Project procedures, Project Management Plan and Environmental Assessment Scoping - Procurement Strategy: Alternative alignments study
11/ 2009 - 11/ 2010	SYRIA	CMA - CGM	National Expert	QANTARAIL Project, the main assigned tasks were related to database analysis and to traffic modelling: reconstitution of sustainable urban mobility by situation of 2008 on the Syrian railway network for two horizons (2015 & 2025)
06/2009 - 06/2011	Barcelona EU	Centre for Transportation Studies for the W- Mediterranean (CETMO)	National expert	In charge of traffic modeling of goods and passengers' routes; for main corridors between Europe, Middle East and the Gulf countries. Flows analysis, routes evaluation, and proposal of adequate scenarios which could serve regional and Mediterranean integration. Action 18
04/2009 - 10/2012	Damascus SYRIA	Consulting Bureau and Engineering Works Damascus University	Railway Engineer	Design, study and implementation program of Homs tramway city (8 km): track, stations, maintenance program, operation standards. Feasibility study, design study and tramway's integration if the city center of Homs in Syria. Design and Verification the traceability (longitudinal section and cross-section) in accordance with the code of regulations of construction (UIC).
10/2009 - 02/2013	Damascus SYRIA	Damascus Governorate (Consultant : TMS Cos)	National Expert	Master Plan of Damascus City and its vital surrounding: the main responsibilities are: - Supervision & Monitoring of field surveys (traffic, road network, and public transport). - Validation of traffic modelling results done using Emme, analyzing several simulations and making sensitivity tests. Ref. Mr. Rami SEMAAN - TMS consult - rsemaan@tmsconsult.com
05/2008 - 04/2009	Paris FRANCE	Group SNC Lavalin	Infrastructure Engineer	Projects: Feasibility study and Implementing Rack-rail Cogwheel Panoramic train Mountain Puy de Dome – France Conducting reliability study linking between road and rail: the construction of rail over road: - Implementation of new Rack-Rail as a sustainable mobility solution to preserve biodiversity in the area - Validation of traceability (longitudinal section and cross-section) in accordance with regulations on ballasted track. - https://www.panoramiquedesdomes.fr/
10/2004 - 10/2008	Paris FRANCE	Ecole Nationale des Ponts et Chaussée (ENPC)	Teaching	Responsible of experimental module: the cyclic and monotonic triaxial test - Instructor for laboratory sessions in mechanic of soils. Lecturer at ENPC. Ref. Prof. Guy BONNET - guy.bonnet@u-pem.fr

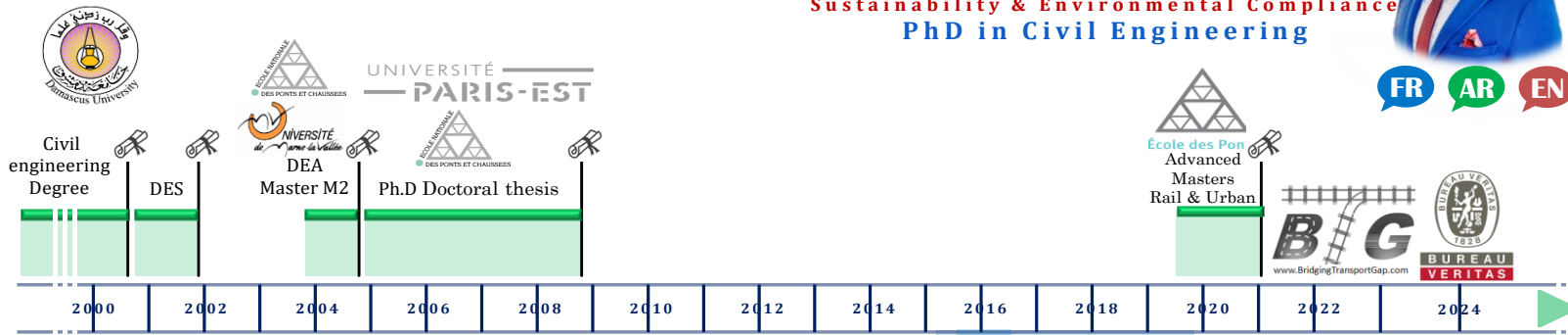
Chronological summary of C.V 2000 - 2024



Khaldoun Karraz
 International expert in
 Sustainability & Environmental Compliance
 PhD in Civil Engineering



Scientific & Professional Course



Engineering studies
2000 - 2003
 الجمهورية العربية السورية
 SYRIA ARAB REPUBLIC
 وزارة النقل
 Ministry Of Transport

Temporary lecturer
2004 - 2008
 ECOLE NATIONALE
 DES PONTS ET CHAUSSEES

Head of department
Department of transport
studies & researches
2009 - 2013
 الجمهورية العربية السورية
 SYRIA ARAB REPUBLIC
 وزارة النقل
 Ministry Of Transport

Ingénieur
d'étude
 SNC-LAVALIN

Post-doc
2014
 ECN
 Centrale
 Nantes

Consultant
2015 - 2019
 TMS Consult
 Towards Sustainable Mobility
 SISSAF
 Support Programme for Infrastructure
 Sector Strategies and Alternative Financing

Eng. studies
2020
 RATP
 INFRASTRUCTURES

Bridging
Transport Gap
by
Train of
Thought



Land
Transport
Environmental
Expert

Syrian Arab Republic
Ministry of Transport

Dr. Eng. Khaldoun KARRAZ
 Director of Studies, Researches & Environmental Affairs

Tel: + 963 11 333 16 25 Mob.: + 963 99 19 40 471
 Fax : + 963 11 333 16 25 E-mail : khkarraz@yahoo.com

Dr. Khaldoun Karraz
Senior Expert in Transport

SUPPORT PROGRAMME FOR INFRASTRUCTURE
 SECTOR STRATEGIES AND ALTERNATIVE FINANCING (SISSAF)
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 A Project Financed by the European Commission
 and implemented by a Consortium led by Hulla & Co. Human Dynamics K.G.

37, Zahrat - Ihsan Street
 Gebely Bldg, 2nd Floor
 Achrafieh, Beirut, Lebanon

E: khaldoun.karraz@sisnaf-lebanon.eu
 Tel : +961(0)1 328 779
 Mob (Fr) 0033 6 95 93 32 03

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info@bridgingtransportgap.com
 https://bridgingtransportgap.com
 Paris-France
 +33(0)695933203