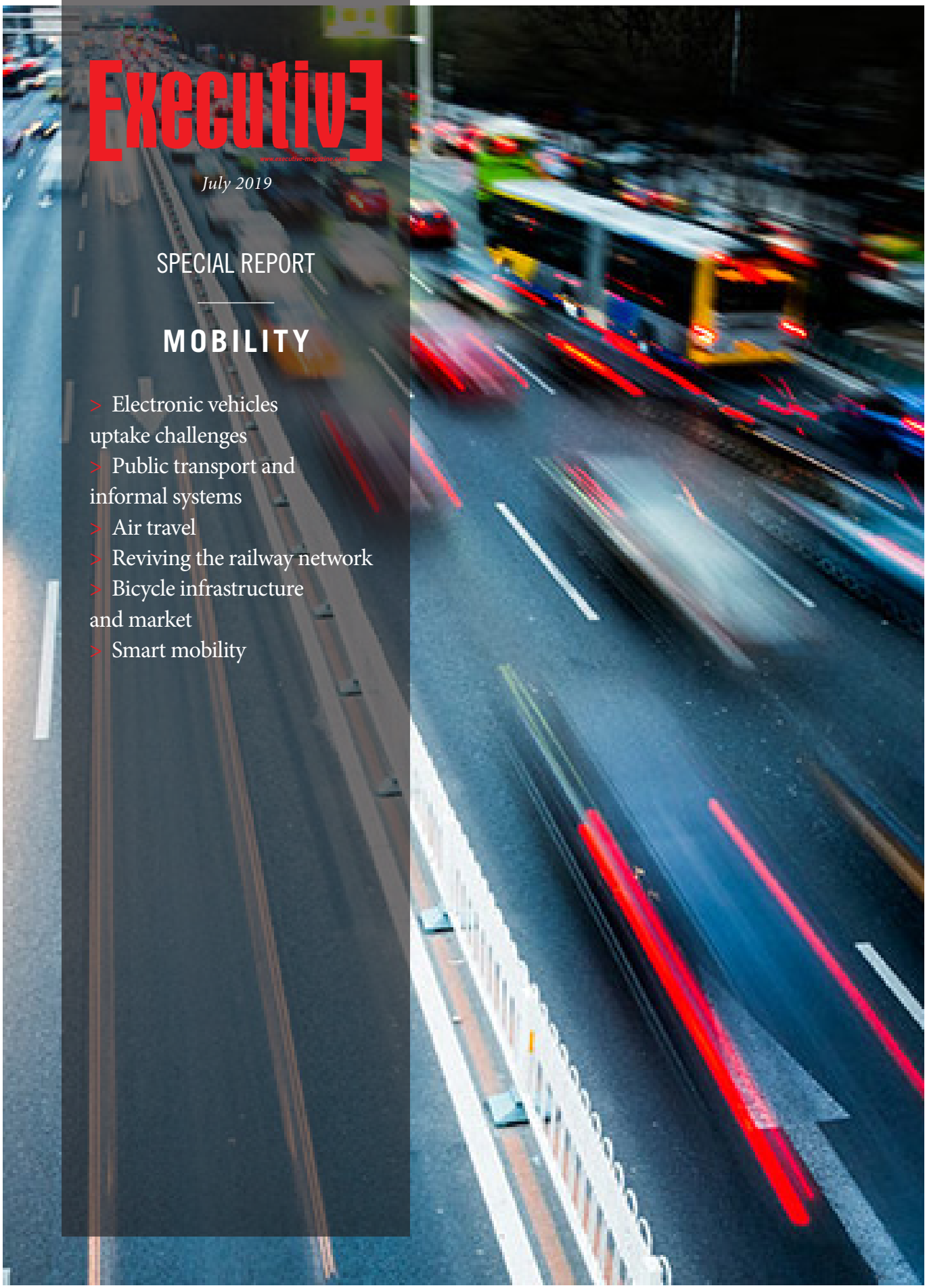

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SPECIAL REPORT

MOBILITY

> Electronic vehicles uptake challenges
> Public transport and informal systems
> Air travel
> Reviving the railway network
> Bicycle infrastructure and market
> Smart mobility

By Thomas Schellen

STORIES OF TRADE AND TRAVEL

The importance of Lebanon's macro and micro mobility

"Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog." - **Adam Smith**

Online economic literature has no ready answer to the question of whether Adam Smith had a deep personal bond with a canine, nor if he was an expert on animal behavior by the standards of the time and Scottish dog-keeping society. But one thing is certain: Smith's interpretation of the distinctly human trait for trade as a "propensity to truck, barter, and exchange one thing for another"—which is directly juxtaposed with his dog reference in his inquiry into the wealth of nations—is an indisputable pointer to the importance of trade in the making of human economy. Some even see trade as the secret that made us human.

Regardless of the idea of what makes one human, one can easily postulate that the impulse to engage in give and take has provided fundamental patterns for people's interaction and development of diverse forms of capitalist economies—whether in Adam Smith's human-gain-oriented propensity or in Karl Polanyi's social-relationships-oriented "reciprocity and redistribution."

From the vantage point of modern Lebanese identity, however, the real roots of this Lebanese identity construct may have emerged and been shaped at the time of the country's political formation. Trade is intrinsically linked to the history of the seafaring people in this region since some 32 or 33 centuries ago when the Phoenician era saw Levantine cities rise to world-shaping trade powers. And for about the same length of time—about three millennia—trade organized from the cities on this coast was inextricably entwined with the people's aptitude for mobility and their adoption of practicable written communication through the Phoenician alphabet.

The narratives of Phoenician trade by ancient Greek and Roman observers strengthen the view that trade is an eternal trait—if there ever is anything human that can be called eternal. Moreover, success in trade, by this very long view, is contingent upon positive linkages to two other fundamental human traits: the desire for mobility and the ability to communicate. This desire to move and discover, entwined with the impulse to pursue actions of give and take, and augmented by the will to narrate, has preceded, transpired into, and historically driven, the development of humanity's trade and mobility tools from the physical to the organizational.

This means on the practical front that the cargo always came before the container and preceded the vessel. It makes the case that trade existed before the first bank opened its doors and that trade indeed determined the creation of the mercantile corporation. It also puts recent issues into perspective. The story—and dream—of travel started before the rise of cart, train, car, plane, and any Elon Musk rocket project; and the commute to places of greater productivity existed before the metro, before the tram, and way, way, way before the ride hailing app (see stories pages 54 and 56).

In short, trade and travel are inseparable from what contemporary society views as progress. As long as people exist, mobility happens and trade happens. But matching the impulses to engage in trade and mobility with the optimal tools and patterns for each moment in history is the source of the narratives of failures or successes that shape history. This is evidenced from the establishment of the Silk Road over the narrative of the Dutch East India Corporation as the archetypical enterprise, to the double daily congestion that we experience commuting between our homes in Damour, Aley, or Jbeil and Jounieh to our work places in Beirut (see story page 30).

For the present state of Lebanon, the importance of trade and mobility extends from the country's positioning on the trade routes between Asia and Europe that are emerging as 21st century Belt and Road iterations of the Silk Road—with all implications for the need to develop Lebanese logistics, marine shipping, and port operations—to responsible care and expansion of 20th century aviation patterns between Lebanon and its relevant but diverse travel markets in the Arab world, Africa, and Europe (see Q&A page 36).

These trade issues, some of which have been getting considerable attention by the political circles in the country, will be integral for the success of the Lebanese economy—but just as crucial for the Lebanese economy, and urgently deserving attention, are the myriad aspects of urban mobility and near-term futures in digital transportation. EXECUTIVE hopes you will enjoy some of our mobility stories and find them useful in working to improve Lebanon's national and your personal productivity.

By Thomas Schellen

THE CHICK AND THE EGG

Private sector embarks on creation of EV charging-point infrastructure

The most eye-catching developments in mobility involve cars. The world is filled with cars; many of us sit in these machines for inordinate lengths of time every day. Surveys done in recent years in the United States found that the average person might spend upward of 17,500 minutes per year at the steering wheel or about the same as seven full work weeks, according to a 2016 study by the American Automobile Association; an academic study in 2007 assessed the average time spent driving by US residents as about one hour and 20 minutes per day, which makes almost 36,000 minutes annually.

Such "average Joe" observations have a zillion weaknesses and are hardly useful when Joseph or Jeanette is stuck in a traffic jam that has no right to exist. But it seems fully reasonable to say that a lifetime in the late 20th and early 21st century is a lifetime with a lot of driving and a lot of time wasted in traffic, as well as other auto-related hassles. If not a driver themselves, pretty much everyone in the world uses or is confronted with cars on a frequent basis, and even the most spiritually focused stylite or eremite in the desert would be hard pressed if she wanted to live with a vow of not setting eyes on passing vehicles.

As our obsession with cars and motorized mobility is shifting to new considerations that stretch from autonomous vehicles and flying taxis to everyday cars that no longer rely exclusively on internal combustion engines, the question of electric vehicles (EVs) and hybrid electric vehicles (HEVs) is capturing the attention of the car-crazy population. This topic of EVs has two parts, however, the first part talking of the latest cars featuring the technology (see story on page 40) and the second talking about the problems of building an EV charging infrastructure.

The question on how to charge EVs rapidly enough and cheaply enough so that electric cars make sense has been at the core of the electric mobility debate since the first hybrids came to market in the late 1990s and specifically since maverick US maker Tesla early in the current decade commercially launched a first pure EV, the Model S, that made every competitor look old. The issue of infrastructure commands so much attention because even if an electric car can be charged fully by plugging it overnight into a power outlet in the owner's garage, this does not answer half of the what-if questions that even a technical dummy can immediately conjure.

FUNDAMENTAL QUESTIONS

What if you need to drive your EV for a longer distance than facilitated by an overnight charge? What if you do not have the luxury of charging for several hours? What if you do not have a garage? What if you do not have electricity at the place where you usually park your car? It is an elementary calculation that electric mobility requires some sort of an infrastructure which, to be really functional, needs to be purpose-built.

After all, a car is a wholly different gadget from your personal smartphone that needs a regular battery charge. Car and phone will both be dead if out of battery, but that is where the similarities diverge. Even the contemporary person with the most stone-age brain gets this, not to mention the highly developed Lebanese brain that has over decades been supercharged in mental ability to incessantly think of electricity supply problems and be ready for them.

In engineering, operational, and economic terms, there are trade-offs between the technol-

ogy used to augment or substitute a car's combustion engine with an electric drive. Larger batteries have greater reach but are heavier and cost more, and complex technical solutions have to be deployed to address this triangular challenge whether the car is a pure EV, a plug-in hybrid (PHEV) designed for external electrical charging in combination with in-drive charging through a combustion engine, or a quasi-internal hybrid (HEV) where all the charging comes from the combustion engine that works as a motor/generator in tandem with an auxiliary electric motor. On operational terms, hybrids are happy with supplies of fossil fuels alone while PHEV and EV owners will want to have access to some sort of external electric charge unit. In terms of economy, more tech and more battery power both carry costs that are difficult to offset when a vehicle is used sparingly.

THE LEBANESE ENVIRONMENT

In Lebanon, electricity is a touchy issue that very often engenders people to break out in lengthy and passionate tirades. Also, politicians have been known to vacillate between making ludicrous excuses for electricity problems and untenable promises that do not address when and how affordably problems might be solved. In between citizen complaints and political debates, electricity issues lead minds to erupt in confrontations filled with arguments that seem driven by passion more than by reason (see story page 60).

In this constellation of existing for decades with poor power realities, when global public attention began turning to e-mobility around 2012, the idea of seeing electric cars on Lebanese streets looked for the next five years like a concept that was completely out of this world. Although PEVs and EVs had become surprisingly successful in markets elsewhere and had gained measurable market shares, few such vehicles made appearances in local traffic.

When Executive produced its 2017 special report on the country's automotive realities, we therefore felt compelled to note that the government until this time had missed out on providing incentives for electric cars—there was a "total absence of a legal framework that would boost the import and sales of hybrid cars or EVs," as one contributor observed. In response to this state of affairs, Executive called in the October 2017 issue's leader for "things such as green auto loans, insurance discounts for EVs, recharge stations at hypermarkets, and free EV parking at malls."

To give credit where credit is due: Since the time of this report, Lebanon's government, lobbied by members in the country's automobile importers' association (Association des Importateurs d'Automobiles au Liban – AIA) introduced incentives for electric car ownership by liberating EVs fully from various duties and by granting reduced customs and fees also for hybrids.

And as this magazine's editors noticed with surprised glee, in 2018, not only did the first quick-charge units for EVs make their first appearances at Medco gas stations, but also several highly desirable and visible parking spots at three malls in town had turned bright green, with the message that they were reserved to EVs (and offered charging options).

Then, in spring 2019, EV import launch events became hot social items on the local calendar, and Beirut saw its first e-Motor show in the middle of April. It was a small-scale show when viewed against an exhausting and e-heavy mobility feast such as the (similarly timed) 2019 Auto Shanghai show with its 1,000 exhibitors and 1,500 presented vehicles (Industry predictions say that China will have about 1.6 to 1.8 million sales of EVs and HEVs in 2019, representing a share of 6.7 percent in the car market.) Nonetheless, Beirut staged a sort of mini Shangri-La of greener mobility where some 18 different electric cars, from posh SUVs and limousines to compact and subcompact urban hoppers, were on show alongside e-golf carts, e-tuktuks, Chinese-made but locally-branded scooters, as well as sharing-economy scooters (brought in from Canada) and European-made e-bicycles (urban and cross-country models).

Although PEVs and EVs had become surprisingly successful in markets elsewhere, few such vehicles made appearances here.

Sparked with curiosity about the new impulses for the Lebanese mobility future, Executive researched the latest EV developments among automotive importers and, to better assess the important question of electric charging options and supporting infrastructure for electric driving, contacted gas station operating companies with avowed electrification agendas.

THE NEW CHARGERS

It appeared from Executive's research that Medco, importer and distributor of oil products and

gas station operator in Lebanon, decided some years ago to investigate electric charging units for EVs and PEVs in Lebanon with an eye to enhancing its long-term commercial strategy and also its communication with the market. According to Nicolas Abou Halka, general manager of Medco's lubricants and bunkering business unit, the group's board of directors decided earlier in the 2010s to undertake an investigation into the electric charging infrastructure.

Abou Halka says he pursued the task through research and by establishing connections with French companies with expertise in EV charging technologies. Medco then decided to import some specialized charging equipment, and while the material was still en route from Europe, the company was fortuitous to witness the Lebanese government introduce incentives for EV ownership. The equipment was installed by Medco in four Beirut gas stations and in the parking structures of three upscale shopping malls.

For Abou Halka, this sparked interest from the local automotive sector. "Having established the seven units, we approached car importers to see about their plans and saw that our move encouraged them to proceed as they had read in many articles that the main issue for bringing EVs to the road is the infrastructure for charging them," he tells Executive. "We have offered them this infrastructure, and they have only to bring in the cars and sell them, after which the car users can come to the stations and charge."

For oil imputing company IPT, the entry point into the issue originated with the company's focus on sustainability. IPT inaugurated a solar-powered EV charging unit in conjunction with what it described as the company's first fully sustained gas station in late spring 2019, explains Vice Chairman/General Manager Toni Issa, who emphasizes that this sustainability strategy is the root of the economic direction taken by IPT.

"We are not waiting to have the electric cars in order to transform ourselves. We are transforming ourselves into [a] sustainable [group of] companies in various ways and methods," he says energetically. At the same time, Issa, like Abou Halka, is fundamentally upbeat on the electric play in automotive mobility and importance of the supporting infrastructure in the country. "The use of hybrid and electric vehicles will certainly grow in the coming few years in Lebanon, especially after the incentives given by the Lebanese state that reduce customs duties and excise taxes on imports," he adds.

Issa says that there is no clear visibility on the scope of the coming EV penetration, naming as reasons external factors such as cost and technical barriers encountered by global manufacturers as well as internal issues in Lebanon such as insufficient awareness of EVs, local cost barriers, and the need to measure the impacts and implications for the national electricity system and for the environment. "The first thing to do is to assess the impact of deploying EVs on the electric grid in terms of capacity and load, and [the related] environmental impact under consideration of the fact that we still rely on fuel oil and diesel oil to produce energy," he explains.

> "The main issue for bringing EVs to the road is the infrastructure for charging them."

Despite his confidence in the proposition of

electric mobility, and despite his commitment to not rely on pollution-heavy power sources but rather use a renewable energy source, Issa acknowledges that IPT has to invest more into a solar-powered charging unit than is required for a conventional grid-based unit. He concedes further that IPT currently has no clear plan yet as to the commercial rollout of solar EV charging units as the whole project is still under trial and is nowhere near generating profit. "We are sure that the market is growing from what we are witnessing, but we are not sure about at what time the demand will justify the investment that we are doing," he tells Executive.

For Medco, the experience of working with the adaptation of various charging solutions for EVs in public spaces provided insightful lessons on the current technical and regulatory barriers that companies have to deal with when they embark on provision of fast charges to automobiles.

Different systems (AC and DC), different plug and socket designs and standards used in Europe and the US versus Japan and China (two existing main solutions are known as combo and chademo), different battery sizes and battery technologies, varying on-board power transmission capacities of cars, and different conditions at each gas station in Lebanon, in terms of electricity supply and grid connection, translate for Abou Halka into investment needs that can be upwards of $50,000 for EV charging units in commercial gas station environments. According to him, installation of less versatile and powerful charging units in places where an EV can park longer and infrastructure designed for mall operations are not as expensive or complex.

As to the company's strategy for developing its charging network, the manager says that Medco is preparing to equip several stations on major Lebanese traffic arteries outside of core Beirut with a new and more powerful generation of charge units. The company will deploy these ultra-charge units in 2019, Abou Halka promises. "We will be starting to put these into operations in the second half of this year," he says. "We will double the number of [charge] units, so that hopefully by end 2019 there will be 15 units spread all over the country, [with the new ones located] along the main axes to the north, south, and east."

He also points to yet untapped potentials that electric mobility could provide in the Lebanese market, specifically to operators of taxis and commercial vehicles, such as buses and trucks. While he vigorously supports the engagement of the government in incentivizing EV and HEV ownerships, and also sees the need for greater public involvement in the specific infrastructure development of charging stations, he also notes some side effects. "Probably unintentionally, the taxation regulation on electric vehicles is greatly favoring the most expensive cars for which very high custom duties are due," he says. "People who buy a premium car with electric configuration will be compensated by the waiver of the customs duties and so what one might see from next year are many more luxurious cars that are electric cars than small EVs." (Economists like to describe such public sector interferences as the provision of perverse incentives.)

> "We are not sure about at what time the demand will justify the investment that we are doing."

Not discounting the fact that provision of commercial charging units is not looking be economical for several years—neither on the level of gas stations nor on the level of charging stations at shopping malls—Abou Halka concludes that a company wanting to be active in the automotive field in the long term will have to take courageous decisions and embark on a journey by starting somewhere and learning by doing. He says, "In the medium term, within the next five years, I think there is a potential for an expansion of the electric car population in Lebanon, provided that the problem of batteries and the high cost of batteries will be solved."

By Thomas Schellen

THE EGG AND THE CHICK

Strategies, opportunities, and natural limitations to EV infrastructure in Lebanon

Based on discussions with the two Lebanese gas station network operators—Medco and IPT—it seems fair to describe the first step of the journey into this particular private-sector infrastructure construction as based on the understanding that electric vehicles will make their appearances in Lebanon sooner or later, and that the country could ill afford to fall behind global developments in electric mobility.

Notwithstanding, however, the faint hope for a sustainable electricity solution among large parts of the Lebanese population, there are clear technical possibilities to solve Lebanon's electricity infrastructure and road quality problems. It appears paradoxical then that the nation's electricity supply problems feature heavily in popular perceptions as a barrier against phasing in electric cars. By comparison, the much less mutable geographical size and population distribution of the country combine into an issue that is not much talked about in connection with the viability of e-mobility approaches.

Lebanon is a very small country if one thinks about distances that need to be covered—driving time is a different consideration. From practically any starting point in the country, there is simply no direction in which a person can drive for 250 km straight and still find themselves in Lebanon. Also, Lebanon, by international comparison, has high urbanization, high population density, and relatively short internal distances when compared with any non-small-island nation.

On one hand, this means that establishment of electric driving infrastructures and charging units are not nearly as challenging in Lebanon as they are in thinly populated territories or nations where long stretches of roads lie between settlements—whether one thinks of geographies in Africa and Australia or countries like Norway that face automotive e-infrastructure issues.

To illustrate the point, Lebanon's gas station network is estimated at about 3,200 units, of which 2,500 are officially registered. In a country where the population density is assumed to be around 600 per-

sons per km² spread across 10, 452 km². European countries with gas station networks in the similar range of 2,500 to 3,000 in total are, for example, Sweden, the Netherlands, and Bulgaria. However, Sweden is 45 times the size of Lebanon by territory, Bulgaria 11 times, and Austria eight times. Population densities in these countries range from just under 30 persons per km² in Sweden, to 64 in Bulgaria, and 101 people in Austria.

Such data suggests that exceedingly few people in Lebanon would have to cover as large a distance as typical Austrians, Bulgarians, and Swedes when they want to visit relatives or business acquaintances across the country, and that the average hamlet dweller in Sweden, Bulgaria, and Austria has to drive much farther than the typical Lebanese to get to the nearest fuel pump.

So, in relative terms, Lebanon does not look like a territory that will face particular economic cost barriers when it comes to the establishment of a charging unit network. Recalling the experience with the rollout of mobile telecom infrastructure during the country's post-conflict restoration of communications in the 1990s reinforces the notion how fast the nationwide mobile networks could be built in regional comparison.

On the other hand, the shortness of distances and high concentration of people in Lebanon also means that economic feasibility of mobility options involving high initial acquisition and comparatively advantageous, or even low operation costs, is not easily achievable. It is, apart from a few people who drive for a living, quite a rare feat for any motorist in this country to cover more than 100 km or 200 km on a given day and reach an average annual count of more than 20,000 km or 30,000 km.

This, in turn, means that vehicles with a trade-off between elevated acquisition cost and low operations cost make little sense in Lebanon, if lifetime cost of a car is the main consideration. Electric vehicles (EVs) of certain power, quality, and comfort, cost more than similar cars with an internal combustion engine, at least in 2019 and probably for some years to come. This means that an average Lebanese with daily driving needs of 25 km to 35 km (9,000 km to 12,500 km per year) will hardly ever save enough money from e-charging (vs. filling up with gasoline) to recover the higher acquisition cost of the e-version of his compact or middle-class car.

Such factors illustrate that overall feasibility of automotive electric mobility is a complex scenario by which barriers and opportunities will differ widely from country to country. Moreover, in the current situation of undeniable mobility needs that clash with old, economically, and environmentally no longer tenable solutions, engineers, tinkerers, and visionaries are crowding the field of radical inventions with solutions that have technical potential.

Contenders that are visible from the cognitively very limited vantage points of media range from cars with integrated solar cells, where a long-range passenger sedan prototype this summer was introduced by a Dutch manufacturer, to hydrogen-powered vehicles using the fuel cell technology that is often mentioned in the discussion and is available internationally in some vehicles on the road. But in all probability there are many not-yet-discussed inventions that are looming just beyond the horizon as solutions in both the in-car and infrastructure technology realms.

> The move to future mobility will economically be marked by new winners and creative destruction of old realities.

As the market constitutes the economy's cognitive laboratory for discovering the most feasible practical solutions for an economic problem with great social and financial implications, i.e. profit potentials, the move to future mobility will economically be marked by new winners and creative destruction of old realities. State interferences in this market process in form of regulations and sometimes unintended nudges will additionally influence the mobility developments and sometimes distort them, but public interventions are inevitable due to the great importance of mobility for society.

MOBILITY OF SELF IS MUCH MORE THAN AUTOMOBILISM

The entirety of automotive mobility and diverse digital mobility is thus being immersed in an ocean of change that is concealing a wide variety of challenges but also is already witnessing all the mobility perks, trimmings, and side shows—from hybrid cruise ships to Formula E car racing—that the world has become addicted to in the 20th century.

Also, it pays to remember that this is not just about cars. Socially and financially profitable digital mobility trends relate to everything with wheels. Biking fans can look—and buy in Beirut—top of the line electric bicycles, which today means digitized two-wheelers with pedals, advanced and often very well-concealed batteries and minimalistic electric motors that support and amplify human pedal power. While pricey for a bicycle, quality

specimen are engineered to transform both urban and cross-country pedaling efforts into paradisiac experiences. Moreover, sleek e-bikes of recent manufactures—and Europe is right now brimming with startup producers and avalanches of fascinating new e-bike designs, reach serious speeds (some versions do not lose thrust until 45 km/h) without the stigmas of being clumsy, unsightly, or retiree mobility focused transport tools that had once limited the attractiveness of e-bikes to some buyer segments.

In the Lebanese market, retailer Bike Generation says they sold somewhere north of 120 e-bikes over the past five to six years. As Bike Generation co-founder Georges Bouez tells Executive, the market here has rational potentials for use of e-bikes in commuting. He concedes, however, that this potential is still restrained by apprehensions about e-bike prices—which are high in comparison to mass-market conventional bicycles but actually, at $3,000 to $9,000 for an imported machine, are not exorbitant when one takes a look at what some e-bikes go for in European countries—and by misperceptions that a bicycle is exclusively for leisure and not suited for daily transport to work.

Then there is an entire realm with heavy electric mobility disruption potentials in micro-commercial and personal urban transport. This realm extends on one side from e-versions of transport scooters to three-wheeled vehicles used on private properties such as hospital and university grounds. E-mobility in this segment can ease transportation of goods and persons in specific environments, but they appear to be in need of clear allocations on what spaces they can circulate and also better regulations as to which uses require what safety precautions, driver training, and insurance covers.

The same need applies to the adjacent mobility segments of electric kick-scooters and e-versions of conventional scooters, the latter long having acquired a well-deserved reputation of being threats to any organized and rule abiding traffic in Lebanon.

Constituting additional options for urban personal mobility around the world's cities (and arriving with the concomitant news of accidents involving electric kick-scooters), these fast-rolling stand-on mini-vehicles, which are jumping from being mobility toys of preschoolers to choices of grown-up urbanites, could emerge as the layer of one-risk-too-far in local traffic if they are not subjected to adequate regulatory frameworks and actual enforcement of such frameworks. Similarly, an increase in the population of electric scooters in Lebanon might easily become the new menace dimension of obnoxious and no-rules-respected delivery guys that make streets in any Lebanese city become risk accumulation cauldrons.

> There is an entire realm with heavy electric mobility disruption potentials in micro-commerical and personal urban transport.

In short, all these realms of new, up-scaled, and old mobility bring added risks, and although these diversified transport and mobility options tend to bring benefits and perhaps increase urban productivity, the expectation will only have merit if Lebanon's national and municipal frameworks of informal traffic conduct, formal regulations, and effective and respectful enforcement are seriously enhanced.

Without even embarking on a discussion of what mid-term future scenarios involving e-trucks and e-buses, autonomous delivery fleets, taxis, and goods or passenger drones could mean for Lebanon, the digital mobility scenario that is starting to solidify here is one of a transitional sense—meaning not one of economic determinism or dialectical paradigms. The chick of the new digital mobility is contained in the egg of the country's existing mobility; namely the, historically unprecedented, progress inducing but also problem-laden 20th century mobility. The emergence of the new will be a challenge, and it will take all the investments of structure and sanity that Lebanon's state institutions can muster.

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PIKASSO

By Nabila Rahhal

THE WHEELS OF THE BUS... ARE STUCK IN THE MUD

Lebanon's informal public transport system

Public transport is part of Lebanon's mobility heritage, as is evident by our popular culture. In the song entitled "*Ala Hadir el-Bosta*," the late Joseph Sakr sings of his love Alia's pretty eyes while on a shared bus from Hammana to Tannourine, humorously describing the passengers who were with him—the song was composed by Ziad el-Rahbani in 1978 for his play "*Bil Nisbe La Bukra Shu*?" Marcel Khalife also sings about shared transport in "Toot toot *ala* Beirut," where a young boy asks his father to take him to Beirut in a service (a Lebanese shared taxi). A popular Lebanese children's rhyme encourages the bus driver to accelerate to 199 km/h without worrying that this will get him in trouble with the police as the children will have his back.

Songs and rhymes aside, images of the tramway passing through Bliss Street in the 1950s, or of the train running through the coastal plains (for more on trains in Lebanon, see article page 42), are still shared on Lebanon's nostalgia social media pages and evoked in photography exhibitions of the country's recent past.

Despite this well-developed history of mobility, a casual observer of Lebanon's roads today—noting the buses, minivans, and *services* all stopping to pick up passengers anywhere and anytime they please—would not be faulted for thinking that the country has never experienced organized public transport of any kind. And yet, there is a certain rhythm to the existing madness, as well as emerging plans for the organization of the public transport sector which will eventually—hopefully—revitalize and restore mobility within Lebanon (for more on public transport plans, see article page 30).

A BRIEF HISTORY OF BUSES

Ziad Nasr, president and director general of the Railways and Public Transportation Authority (RPTA), explains that with the intensification of the civil war in Lebanon, public transport infrastructure was eventually destroyed. The post civil war government's immediate priorities were to rebuild the airport and fix the roads to reconnect the country externally and internally, Nasr explains—as such public transport rehabilitation fell through the cracks. Since then, "there were several proposed projects to revive the railway system or rehabilitate public transport, but there was no real political will or a ministerial decree to invest in them and implement them," Nasr says.

One project that was implemented—but was not very successful—was the RPTA (also known by its French abbreviation OCFTC) owned blue and white buses that were introduced into Beirut in 1995. At the time, a fleet of 200 buses were introduced into Beirut, running on 22 lines, and 806 bus stops were constructed across the city. However, according to Tammam Nakkash, managing partner of Team International, an engineering and management consultancy, who was contracted for this project, they faced a lot of competition from the non-regulated buses and minivans (see article page 30). Nasr believes the lack of consistent funding into their maintenance and into the system itself was another reason the buses were not successful as they would breakdown and there would be no funds to fix them. "Public transport planning is not simply to have a driver and a bus, but also to have a back office which plays the role of planning and supervision," Nasr says, adding that only 35 of these buses are still in operation today across nine lines or routes in Beirut and one in the Bekaa (for more see article page 30).

WHEN NATURE ABHORS VACUUM

Chadi Farraj, co-founder of the Bus Map Project, a grassroots initiative that maps public transport in the Greater Beirut Area (GBA) (see box page 27), says there are two models of public transport system: formal and informal. The formal system is where vehicles have one operator—a private entity or the government—and run on a fixed schedule with designated bus stops; the kind encountered in most developed cities around the world. The second model is the informal one and is more commonly found in developing cities such as Bangkok, Manila, Amman, and Beirut, where a formal or organized public transport system does not exist. "The informal bus system fills the gap where it is found and answers the need of a certain segment of society [the low-income to lower middle-income segment], so there are many versions of it across the world," Farraj says. "It operates wherever there is demand, is organic, and makes the best use of what exists. There is no schedule or bus stop in the informal system, and it does not have a unified operator but rather a series of individual operators."

Nasr acknowledges that with the lack of government provided and regulated public transport, it was only a matter of time before private sector alternatives were developed in a haphazard manner, explaining that this is exactly what is happening with other services meant to be provided by the government like water or electricity—where the private sector is also stepping in given the absence of public sector provision. This lack of regulation has led to a chaotic public transport system that compounds congestion across the country and specifically in the GBA, Nasr says.

Nakkash says the public transport situation in Lebanon can best be described as, "a loosely regulated transport system; loosely in that the existing rules and regulations are not enforced 100 percent, plus the whole regulatory system is deficient." He explains that in metropolitan areas the size of Beirut there usually is a transport authority body that regulates public transport in the area. While the RPTA could be charged with this role, the fact that they own and operate public transport buses makes it problematic for them to be regulators, in Nakkash's opinion. "The government should get out from providing the service and play a regulatory role that only the government can play," he says.

> "The informal public transport system fills the gap where it is found and answers the need of a certain segment of society."

THE RED PLATE DISTRICT

What compounds the chaotic feel of the informal public transport sector in Lebanon is the system of red registration plates that drivers can obtain from the Traffic and Vehicle Management Authority (TVMA) under the Ministry of Interior (MoI). These registration plates are tradable assets that can be bought and sold, explains Nakkash, and so are a big part of the public transport problem in Lebanon. "Because of this system, organizing the needs for public transport of Beirut or

Tripoli or any city based on location is not easily achievable as you cannot control or dictate where the driver operates," he explains.

As per official data, there are currently 55,236 red plates registered with the TVMA, according to Ali Mohieddine, head of the Syndicate of Public Transport Vehicle Operators, which has over 40,000 registered members. Underlining this chaotic sector is the fact that, in total, there are 23 different syndicates for public transport drivers, alongside six unions. Using numbers from the TVMA, Mohieddine says the plates are divided among public transport vehicles as follows: 33,000 cars, 4,000 vans or minibuses, 2,236 24-seater buses for public transport, and 16,000 freight trucks.

All those to whom Executive spoke, say that the number of public transport vehicles in Lebanon is significantly higher than the number of licensed vehicle plates provided by the TVMA. The last time the TVMA issued new red registration plates was back in 1994; the abundance of red plates seen on the streets today is partly due to the widespread forgery, with duplicate registration plates in circulation. Mohieddine says that based on the syndicate members' estimations, more than half the public transport vehicles in operation have forged plates or are driving without license plates in remote areas out of the GBA. A 2017 UNDP study estimated that there are 17,000 illegally procured and operated taxis in circulation. Aside from saturating the market, forged plates are dangerous in case of accidents or security issues, as allocating blame becomes impossible, Nakkash explains. Nakkash and Mohieddine both believe that those who are bold enough to use duplicate registration plates are politically-backed.

The MoI issued new designs for the red registration places in 2017, which all registered public transport vehicles should shift over to by the end of 2019. The move was partially intended to curb the number duplicate plates used by unlicensed public transport vehicles as the new design is harder to replicate, according to a statement by Huda Salloum, head of the TVMA. Mohieddine explains that this move is a step in the right direction by the MoI as the new license plates can only be obtained from the TVMA and so only registered cars can make the switch; cars with duplicate or forged plates are unable to secure a new plate, which could explain why a big percentage of public transport vehicles still have the old red plates with only six months to go on the deadline.

BUSES FOR ALL

Chaos and corruption aside, Lebanon's informal public transport sector has its own problems. Nasr says that because public transport is provided by profit-driven private operators, areas with the highest demand are over served, whereas more remote areas have little or no access to public transport—those living further away from the GBA have less public transport options. If public transport was provided by the state, says Nasr, then all areas of Lebanon would have to have equal access to it as a public right. Nakkash says that the informal system cannot even be called a system in his opinion, as it does not run on a reliable fixed schedule or frequency.

There is also the public perception that all of these buses and minivans are in bad condition, are badly driven, and are only used by those who absolutely cannot afford a car or cab, although Farraj says this is all exaggerated. "We should break the stigma of riding buses," he says. "A small percentage of buses are rundown and some lines do feel like they are managed by a cartel, but this is not true across the board.

Underlining this chaotic sector is the fact that, in total, there are 23 different syndicates for public transport drivers, alongside six unions.

"When there is a stigma regarding the public system, people will believe anything: If there is only one bus that is broken, the perception is that it is all broken."

A BEAUTIFUL MESS

For all its faults, the informal public transport system manages to get a nearly impossible job done; it takes people to their destinations, despite the congested roads, in an affordable and efficient manner—a bus ride within Beirut costs LL1,000 ($0.66).

Although the perception is that there is no structure to how the informal system of buses and minivans run, two initiatives—the Bus Map Project (see box page 27) and YallaBus—have demonstrated otherwise by mapping out the bus lines in the GBA. Farraj explains that the GBA is divided into lines or bus routes that are identifiable by number. This system was developed in 1995—with the aforementioned white and blue buses—and at the time there were 22 bus lines within the GBA, says Farraj. While no official data exists, Farraj says that

BUS MAP PROJECT

Chadi Farraj first thought of mapping the Greater Beirut area's bus system in 2008, when he himself wanted to use buses to commute to his new job in Beirut. Since his background is in telecom engineering, he created an online map for buses followed by an app. The project remained a personal hobby until 2015 when he met Jad Baaklini, who was doing research on public transport in Beirut and fell upon Farraj's work; together they created the brand identity of Bus Map Project. That year, they submitted their project to the EU-funded SwitchMed, an initiative that supports and connects stakeholders in eco and social innovations, and won 3,000 euros in addition to technical support.

Using this experience, and through an entirely volunteer-based generated content, they collected the data needed for mapping the major bus lines in all of the GBA, and designed an online and print version of the map that they are distributing. Despite having the majority of lines in the GBA covered, Farraj says the map is still a work in progress, and the next step is to cover outlying lines.

As he explains it, the goal of the map is to "make the system accessible to the general public so they use the buses more." He explains, "Although we are not directly encouraging people to ride buses yet, we are indirectly encouraging them to do so through the map and therefore will gradually work on empowering the system.

"Our role has always been to highlight the informal bus system in Lebanon, change the conversation regarding public transport in Lebanon and break the stigma regarding riding the bus in this country."

more lines have been added since then, as urbanization increased the areas that needed public transport.

Each line has an average of 30 buses or minivans running on it with roughly fixed intervals—around 10 minutes—between each deployment. Within the city, the 12-seater minibuses or vans are proving more successful than the 24-seater buses. As Farraj explains, operators realized that vans go faster in Beirut's narrow streets and fill up quicker, enabling them to do more trips in less time. Operators also priced them competitively, at LL1,000 per ride anywhere in the GBA.

Therese Keyrouz, cofounder of YallaBus, says that bus lines within the GBA tend to have one main operator or *rayess* who owns the vehicles in the line and pays the drivers a daily fee for their service. Buses that take passengers to and from the GBA are usually individually owned and drivers/owners decide on the frequency of deployment through a gentleman's agreement, says Keyrouz. Bus drivers commuting intra-city also communicate with their frequent passengers to eventually develop a timetable that works for all, she explains. (The nature of the informal system makes it very hard to pin down its operators, as they are disparate and mostly unregistered, with no authoritative source to go to for answers.)

Then there is the model of privately-owned companies that operate more or less organized public transport generally from and to Beirut. Connexion, which runs between Beirut and Tripoli, is one such example: its buses are air-conditioned, well-maintained, and have Wi-Fi; they also run on fixed schedules and make few stops along the way. Although Connexion has a higher fee than a van (LL5,000 for a one way ride as compared to LL2,000 with a minivan or bus), some do not mind forking it over for some extra measure of comfort.

> While the informal public transport system is clearly far from perfect, a considerable number of people rely on it for their daily commutes.

BY THE NUMBERS

While the informal public transport system is clearly far from perfect, a considerable number of people rely on it for their daily commutes. Based on her field research, Keyrouz estimates that each bus in operation within the informal bus system carries an average of 200 riders per day.

Some lines have more demand than others. Farraj also conducted field research on line number 5—that runs from Hamra to Ain Saade in Mount Lebanon—and estimated that its 24-seater buses carry 3,500 passengers per day on their average three round trips per day. According to a 2016 study by Petra Samaha and Amr Mohtar, then students at the American University of Beirut, the minivans on line number 4—that runs on a high demand route between Hamra and Hadath—carry 5,600 passengers per day. Louai Halabi, director of Connexion says their 24 buses run on a daily occupancy of 80 percent with each bus making two round trips per day.

While Lebanon's current informal public transport system is a far cry from the organized and thriving formal system the country enjoyed in the pre-civil war days, it still functions, despite the obstacles and despite its obvious flaws. There are a lot of improvements that could be done to this system, and yet its relative success in transporting passengers efficiently should be noted when planning for the new models of formal public transport systems soon to be introduced to Lebanon (see article page 30).

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By Nabila Rahhal

THE BEST LAID PLANS

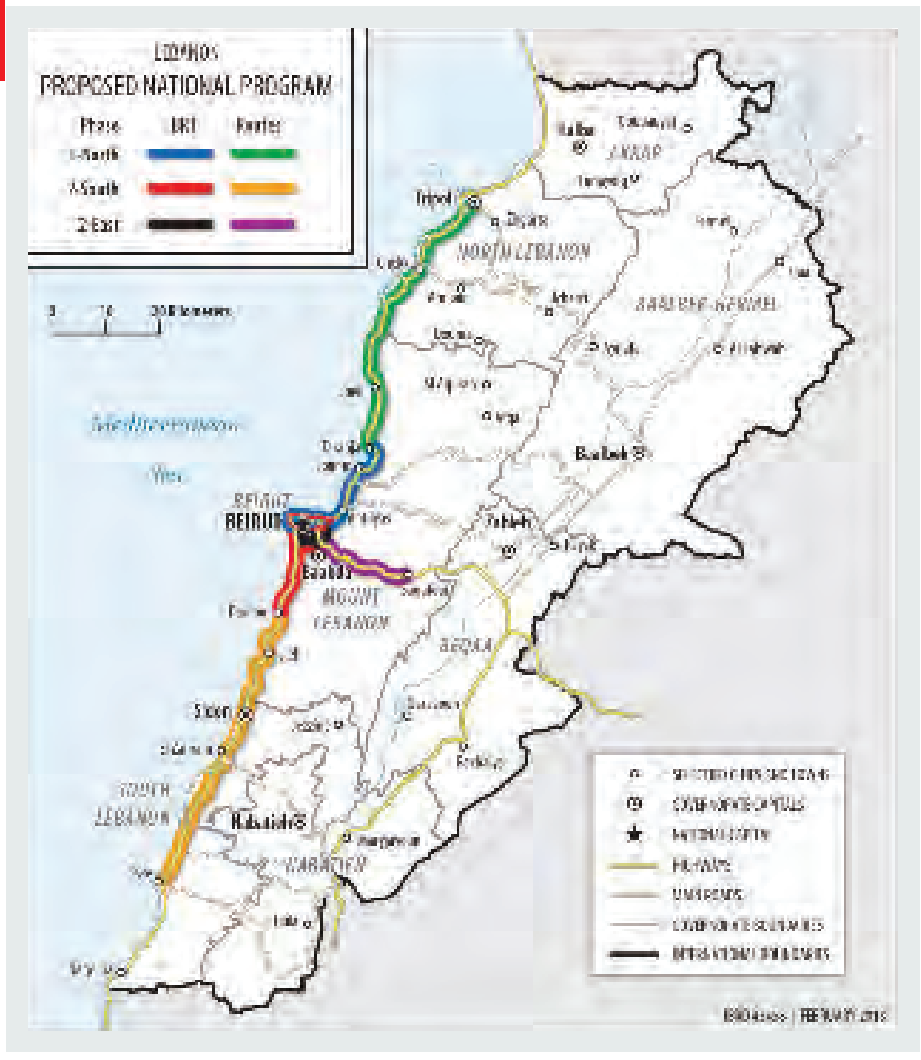
Public transport projects in Greater Beirut and beyond

While it is true that exaggeration is somewhat of a national trait, when it comes to congestion getting in or out of Beirut—and driving inside it—it often feels that no hyperbole is enough to describe the sense of despair evoked when inching forward in bumper to bumper traffic breathing in exhaust fumes and listening to the sound of honking horns.

The numbers indicate that the congestion problem in the Greater Beirut Area (GBA) is real. The World Bank estimates that 650,000 vehicles enter the GBA on a daily basis, with 300,000 accessing the city via the northern entrance of the Jounieh-Beirut highway, 200,000 via the southern entrance, and 150,000 via the eastern highway or Hazmieh highway—not counting the vehicles already in Beirut. Getting stuck in this kind of traffic is not only frustrating, it has a negative impact on GDP as well; the World Bank estimates the cost of urban congestion at 5 percent of Lebanon's GDP.

Because Lebanon does not have reliable public transport, people have little choice but to use their cars, especially when commuting from outside the GBA, according to Ziad Nakat, senior transport specialist at the World Bank. "The available public transport in Lebanon is of low-quality and people are reluctant to use it," he says. "It is catering for the market of those who really don't have an alternative, so it's not fair for the low-income population, and is not providing the middle-income people with an alternative to their cars, so it's not solving the problem." (See article on informal public transport page 24).

PROPOSED NATIONAL BRT SYSTEM



Source: The World Bank

Decreasing congestion by developing more roads is not a viable option, according to Nakat, because of Lebanon's urban density and its terrain, with the mountains to one side, the sea to another, and a narrow coastal strip in-between. Any road development project would need to either expropriate land or construct tunnels in mountains or highways over the sea, all of which are costly options, Nakat says. This, he argues, leaves developing a reliable public transport as the only option for decreasing congestion. "Greater Beirut has a population of at least 2 million, and in any city with a population of more than 1 million, it is very difficult to reduce congestion without public transport," Nakat says. In comes the Greater Beirut Public Transport Project (GBPTP).

BUS BY NUMBERS

According to Nakat, the GBPTP includes a Bus Rapid Transit (BRT) network—described by the international civil society Institute of Transportation and Development Policy as a "high quality bus based transit system similar to a light rail or metro system"—of around 120 18-meter BRT buses, each with a capacity of 120 sitting and standing passengers, that will run on 40 km of dedicated lanes—lanes sectioned off with barriers to prevent other vehicles from accessing them.

The main BRT line will run in the center of the highway from Beirut to Tabarja, Keserwan, covering a distance of 26.2 km, with a couple of lines on the outskirts of Beirut proper, including Ain el-Mreisseh, Cola roundabout, and Mirna el-Chalouhi avenue (see map page 30), according to Nakat. When the infrastructure does not allow for a dedicated BRT lane, such as when there is a bridge or tunnel, it will join the other vehicles on the road for a short distance, which is something a train or metro cannot do, he explains.

In order for people to access the BRT, there will be three central "park and ride" spaces, in Tabarja, in Charles Helou station, and in the Mar Mikhael bus station, the latter two of which will be renovated, where passengers can park their cars and take the BRT. There will also be bus stations at every 1 km of the journey from Tabarja to Beirut that passengers will access through a pedestrian bridge equipped with both stairs and elevators; this is a plus for pedestrians who will be able to cross the highway risk-free.

According to Nakat, the BRT itself can bring down the roughly 90-minute journey from Beirut to Tabarja—or vice versa—during rush hour traffic to 40 minutes, reducing total daily commute time by an

BEIRUT MUNICIPALITY PLANS

Jamal Itani, president of the Beirut Municipal Council, acknowledges that Beirut is heavily congested and pinpoints several reasons as to why, noting municipal solutions, complete with timelines, where they exist.

Most of the traffic in Beirut is caused by incoming vehicles, commuters traveling into the city for work, school, hospitalization, or a number of other reasons, Itani says. Managing this external source of congestion does not fall within his area of operation as Beirut mayor, and so the World Bank is doing an important job with the BRT that will hopefully ease this source of traffic by 10 to 15 percent, "which, if it really does happen, will be great," says Itani.

Another reason for traffic within Beirut is poor traffic management by the police force. Itani says, in his opinion, Lebanese drivers do not respect rules and regulations unless enforced by fines—and so their culture of driving has to change. Meanwhile, there are not enough people on the police force to do a good job of traffic control with the amount of vehicles on the road. Itani believes there are not enough car parks in Beirut and so people double or even triple park on occasion, compounding the congestion problem. His solution for this is to construct car park buildings in key areas in Beirut, to be completed by 2021.

Some improvements are also needed in terms of traffic circulation and road planning in Beirut, Itani says, giving the example of streets that would benefit from being one way instead of two way or streets where no parking should be permitted. He says he has hired two consultants who are doing just that in addition to working on a plan to widen some of the sidewalks in Beirut to make them more pedestrian friendly; this is a project that is currently being implemented and was piloted with Jean D'Arc street in Hamra in 2018.

Itani says the Beirut municipality is working on a plan to discourage the use of private cars and instead encourage alternative transportation. Part of that plan would be the aforementioned widening the sidewalks to encourage more walking in what is essentially a small and easily walkable city in the right circumstances, he says. The bigger part is the creation of 16 km of dedicated bike lanes, divided into two loops across Beirut, with malleable barriers along their edges to prevent vehicles from crossing over and to keep cyclists safe. The project will include 25 bike sharing stations, although three of these stations are already installed and not functioning. Itani says it is bureaucracy that has delayed their work on this project, and he hopes to have it completed by the end of 2020.

hour. To connect the BRT with the cities and areas around it, Nakat says the GBPTP includes a network of 20 lines upon which a total of 250 feeder buses will drive among the other vehicles on the road and take passengers closer to their destination. He explains that a dedicated BRT line is not needed for those areas that will be served by the feeder buses as congestion is not a major issue there.

The total cost of the GBPTP is $295 million, $225 million of which are coming in the form of a soft loan from the World Bank, with the remaining $70 million a grant, Nakat says. Future plans, which the World Bank may be interested in being a part of, include a BRT at the southern entrance of Beirut, he adds.

The Council for Development and Reconstruction and the Railways and Public Transport Authority (RPTA) are working with the World Bank on the infrastructural groundwork, but operation and management of the BRT and feeder buses will be by the private sector upon purchase of the buses, Nakat says.

The GBPTP project has been approved by the World Bank's board of directors and Lebanon's Council of Ministers and the loan has been signed off but is still pending the approval of Parliament, at the time of this writing; the deadline given by the World Bank was July 5.

REALITY BITES

On paper the GBPTP looks like an ideal solution for the GBA's congestion problem, however, stakeholders are aware that implementing it will not be an easy task. To Ziad Nasr, president and general director of the RPTA, anything can be surmounted through collaboration. "Shared transport is a shared responsibility and so there should be coordination among all stakeholders including the Ministry of Interior and all municipalities in which the buses run through," he says, explaining that this is the most crucial for the first phase when the infrastructure is being laid down.

Nakat anticipates an increase in congestion while the infrastructure is being developed that will result in backlash from commuters who will suffer even more in traffic before things begin to get better. The BRT will also necessitate that a lane be taken away from private cars, which Nakat again anticipates will be a problem among motorists who are attached to their car as a mode of transport—and there are plenty of those in Lebanon. According to Nakat, private cars account for 85 percent of the trips made in Lebanon.

Still, Nakat believes these discomforts will help in shifting the Lebanese mentality from driving their cars to riding the public transport vehicles, emphasizing that the focus should be on moving people more efficiently and not on moving cars.

WEGO TO RUN FROM JBEIL TO BEIRUT

The idea of having a bus line to connect Jbeil with the rest of the towns in its district was born out of a need. As Aya Younes, spokesperson for the municipality of Jbeil explains, plenty of buses dropped people off to the main entrance of Jbeil city but then passengers would be left stranded to get to their homes in nearby areas that are not served by public transport. People therefore generally preferred using their private vehicles to commute, which added to the congestion in Jbeil and its surroundings, especially in the summer when expat Lebanese return and more people vacation in their hometowns or simply visit Jbeil for tourism.

According to Younes, Ziad Hawat, current member of Parliament and former mayor Jbeil, was the one who pushed for this idea of public transport in Jbeil when he was in the municipality and continued to see it through until it materialized in an agreement with Connex, a bus management and operation company, in 2019.

A new bus system called WeGo will encompass six lines connecting Jbeil with its neighboring towns and one that will go to and from Beirut. WeGo will have a central station in Jbeil on land Connex rented from the municipality. The total area covered is 360 km with around 90 stops along the route, according to Younes. WeGo will use 40 30-seater busses all equipped with Wifi and air conditioning; Connex is also working on a mobile application which will allow users to check timetables and live updates using GPS.

The total cost of the project is $6 million, according to Younes, an amount which the municipality helped Connex secure form European non profit organizations. Implementation is expected to start by the end of the year with the year 2020 as an expected completion date.

COME TOGETHER

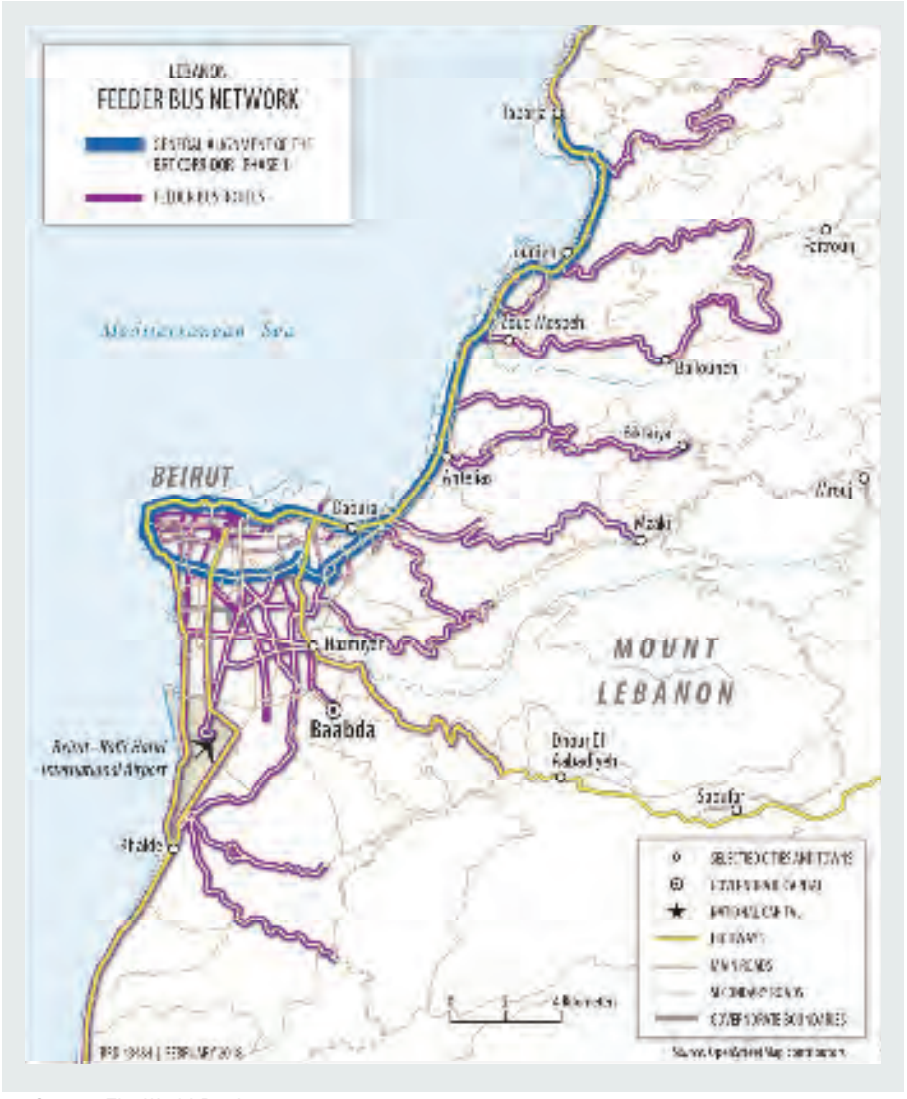
A reality that the GBPTP will have to contend with is the existence of an informal network of public transport buses and minivans in Lebanon (see article page 24). "In the absence of the public sector providing shared transport, the private sector has largely taken over although in a chaotic and unregulated manner, and there are many who now work in the informal public transport sec-

> "Shared transport is a shared responsibility and so there should be coordination among all stakeholders."

tor," Nasr says. "Therefore, there should be solutions by the government for those who are working in this sector such as integrating them in the new system."

Nakat sees all stakeholders of public transport, including the informal system operators, as working together to increase public transport usage in Lebanon, and says the majority of bus and minivan operators will be integrated within the GBPTP. He explains that some will be hired to drive the feeder buses while others may tweak their business model and choose to operate in the areas the GBPTP plan does not cover or transport passengers to and from the BRT stations. Others, however, are not as confident and believe that integration will not be smooth. Speaking out of personal experience with the RPTA owned buses, Tammam Nakkash, managing partner at Team International, an engineering and management consultancy, says the informal system negatively impacted their business back in 1995. "The informal sector heavily competed with us even breaking the glass of our bus stops and harassing RPTA drivers and there was no one to stop them," he says. "The system broke down because there was no mechanism to regulate the others." Nakkash advises stakeholders in the GBPTP to use the "carrot and stick" approach if they want to integrate the informal sector, working with them but also enforcing regulations when they are violated.

FEEDER AND REGULAR BUS NETWORK



Source: The World Bank

Chadi Farraj, co-founder of the Bus Map Project, an initiative that maps the informal public transport system in Lebanon, believes that integration of the informal system alone is not enough. "They should follow a participatory approach with those in the informal bus system and include them in the conversation to get the majority's input before they proceed," he explains. Farraj adds that the World Bank convened focus groups with syndicates of public transport operators but those do not represent the majority of drivers.

Once the GBPTP is approved by Parliament, it should take up to five years to be operational, Nakat says. During that interval, Lebanese commuters to the GBA will unfortunately continue to drown in traffic while dreaming of faster commute alternatives such as the BRT; or dare they even dream of a railway or metro system in the future?

Executive

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LEBANON

Lebanon Wins Bronze **at Cannes Lions 2019!**

Winning entry in Cannes Lions Festival by Elie Fakhry and Melissa Chamoun - Impact BBDO

Executive Magazine, Lebanon representative of the Cannes Lions Festival of Creativity for a fifth consecutive year, is celebrating the bronze medal win of Elie Fakhry and Melissa Chamoun from Impact BBDO at the Young Lions Print Competition at Cannes Lions Festival, held from June 17 to 21.

Elie and Melissa, Lebanon's top young advertising talent, won the chance to represent Lebanon on the world stage and join world leaders in advertising in Cannes, France, after coming top over 38 other teams of young professionals in the advertising industry on May 4, 2019. They were chosen for their outstanding work in developing their print ad for Lebanese NGO L'Ecoute by a panel of expert judges gathered at the International Advertising Association (IAA).

The Young Lions Print Competition challenged creative professionals under the age of 30 from around the world to submit a print ad for WWF (World Wide Fund for Nature), an international non-governmental organization working in wilderness preservation and the reduction of human impact on the environment. Elie and Melissa were required to develop an original and inventive print ad to help convince people to adopt an animal with WWF as a Christmas gift, not just to save a single animal, but for the sake of the whole planet.

Mr. Yasser Akkaoui, editor-in-chief of Executive Magazine, says, "If we are to reach real success in Lebanon, we have to begin with our young rising generation. Our creative talent remains our only hope. It is imperative to nourish it, protect it, and promote it. We have been able to work together with the advertising industry to make sure that Lebanon is represented in this festival and that Lebanese talent is showcased for the world to see. My hope is that there will be more great opportunities for Lebanese youth, like the Cannes Lions, to help the next generation to shine and use their talent to make great changes for this country."

Our sincere appreciation to the generous support of our sponsors and partners: Banque Libano-Française, International Advertising Association—Lebanon Chapter, Advertising Association, Clementine, Fortune Promoseven, Impact BBDO, Its, J. Walter Thompson, Memac Ogilvy, Mirum, Noise, Pimo, Republique, as well as the Olayan School of Business at the American University of Beirut, and Air France, the festival's official carrier.

Executive Magazine's choice is and will always be to invest in Lebanon's young talent, which is the fuel for our country's development and growth at all levels. Our drive to nurture and to develop artistic ideas will continue to go beyond our national borders. Thanks to Elie and Melissa for making Lebanon and the Lebanese proud and delighted!

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By Thomas Schellen

SMALL AIRLINE FOR A SMALL COUNTRY

MEA focused on the local Lebanese market

Middle East Airlines (MEA) is one of Lebanon's indisputable assets in the wide realm of mobility. The flag carrier throughout its 74-year history has reflected the varied economic fortunes, ambitions, and realities of Lebanon. To inquire about MEA's positioning and strategic outlook today, EXECUTIVE interviewed Walid Abillama, the airline's head of commercial strategies and alliances.

E MEA very recently declared that it was a launch customer of latest single-aisle Airbus version: the A321XLR. This aircraft has a longer range of up to 4,700 nautical miles and 30 percent lower fuel consumption than other planes in the A320/321 family. What is MEA's strategy behind going for the XLR version? Do you primarily want the fuel efficiency or the larger range?

We want both. Our strategy is based on one clear fact that we have to always remember: MEA is a small airline that is competing at Beirut airport with the biggest airlines in the world. We compete with all these guys, and our natural market is Lebanon, which is a small country. Our strategy is to service most markets to and from Beirut airport that make sense and are sustainable. We either service [these markets] using our own fleet or by using our commercial agreements with carriers that operate into markets where we find common benefits.

The difficulty for us is that the market is decentralized and that we need to set priorities as to which point makes the most sense. We don't fly to other markets—outside of destinations in Western Europe, the Eastern Mediterranean, the Arabian Gulf, and Western Africa—but we service them through code-sharing agreements, especially in North America (Canada and the USA) where we have commercial agreements either as special pricing agreements or as code shares. What makes it difficult for us to serve destinations other than the ones I listed for you is either a lack of economic feasibility for using our own aircraft or a lack of partner [airline], which usually means the unwillingness of a [potential] partner to cooperate with us.

We are a small airline and [we take] the perspective that it is always wise for the national airline to be dimensioned at the size of the national market, which is a lesson that we learned the hard way. When the civil war ended, the management of the airline came up with a strategy that they should go after the Lebanese diaspora. Between 1990 and 1997 there were many losses because we were concentrating on serving Lebanese outside of Lebanon. This is a high-risk strategy, because people residing in a country are interested in and loyal to the airline of that country. Thus the strategy of servicing the Lebanese diaspora outside of Lebanon was at a risk of the competition being in a better position for serving this community. So we lost money.

E Didn't MEA at that time also have a very large headcount in comparison to the number of planes in operation?

Yes.

E And it was widely perceived as a result of the conflict years when many employees were taken on for political reasons?

True.

How much of the loss in the years 1990 to 1997 was based on the strategy of seeking to service the market of Lebanese diaspora customers, and how much was based on the very large headcount?

Approximately one third of the losses were attributed to the irrational network, one third to the irrational fleet, and one third to headcount.

You undertook a massive restructuring in the early 2000s, rationalizing networks, aircraft choices, and employee numbers. What is your approach today?

We take risks but we take very calculated risks because we are a small airline, plus we focus the risks that we take on the Lebanese market. Our strategy is to grow—we cannot escape growing—but the challenge is to do it rationally and at the right time.

Between renewal and expansion you are looking at quite a large investment in the next three years. Is that perception correct? One of the sales argument for the XLR seemed to be that you can reach destinations that are further afield, with this single-aisle twin-engine jet and don't have to use the larger dual-aisle machines. Is MEA looking at using the greater range for expansion into destinations like Sao Paulo?

Let's stick to some facts. The XLP range extends from Beirut to Dakar in West Africa or to Reykjavik and Dublin but it cannot go across the North Atlantic. It can do so from Europe but not from Beirut. It also cannot go to China. [In any case] it is not always good to be a leader. Sometimes it is better to be a follower, and we have learned a lot from low-cost airlines. You can learn from their mistakes and you can learn from their successes. We are very good at observing what other people do and taking the best practices of what they do.

Opening new routes is about when you do it and how you do it. We have a top ten bucket list of what to do, of points where there is [the] most traffic that is not being serviced by direct flights. We monitor this every month and plan accordingly. Sao Paulo is very far [down] on our list and South America is very far on our list, and so is the Far East. North America is on the top of our list but has political obstacles. The next points in Africa that are hot on our lists are points like Abuja in Nigeria, Kinshasa [in Congo], and [other destinations] that come right after [the existing connections to] Abidjan, Lagos, and [Accra]. I would say the XLR could operate in flights to many new [destinations] in Africa and perhaps in Asia, where the challenge is to find the right partner to China. China is a big question.

As you said, the experience of low cost carriers (LCCs) has many lessons to offer, in learning from failures of airlines like Germania or Wow earlier this year and from successes of LLCs in the Middle East market, where Air Arabia and flydubai were founded and became active in the past 10-15 years. This must have had implications for your strategy.

Yes, but I want to note and clarify something. I don't think there is a difference between us and a LCC in the way in which we think commercially. At the end of the day, they, just as we, pay for fuel, maintenance, they pay their crew, taxes, and airport fees. So they have to make money and since they do not have business class to sell, they have to make their money in the economy segment. Their strength is that they are very flexible from very low to very high [economy class fares]. We are less flexible but we both want to make money. So it all boils down to who is monitoring the market better and gives the market what they want at the right time. We also have other tools like loyalty [schemes] and incentives to travel agents but the flexibility in the pricing we have learned to include.

> "I don't think there is a difference between us and a LLC in the way in which we think commercially."

Isn't there a difference between the fact that the LCCs are at the mercy of the market and shareholder interests whereas MEA is the flag carrier-affiliated, albeit by ownership via Intra and its shareholder BDL, with the state? Is your mandate at MEA to make profit at all costs or is your mandate to serve the Lebanese market and look at your profit always in connection to this role?

No, the primary objective is to make money. But we understand that to make money, you have to [do it a way that fits your purpose]. Do you watch football? In football, everybody wants to win, the objective is to score goals and win. But to win and sustain a good team, you need to play well and play nice. And this is something that you have to believe in. Our objective is to make money, but we have to service the Lebanese market and the needs of Lebanon, in the sense of the needs in terms of tourism and people who reside in Lebanon. We need to do this correctly because this will sustain our money-making objective. But the objective is to make money.

But when comparing with purely private sector LCCs, are you not less vulnerable to shareholder decisions that might be driven purely by profit motives?

In 1998, the situation [of MEA finances] was

very delicate and I don't wish to be back in those shoes. Since then, we have built a robust airline with concentration on conservative growth. Our financial position is robust. Our current commercial position in the market is very robust. We have loyalty in the Lebanese market, and we enjoy strong market shares on our routes because of the services that we offer. We offer the right capacity at the right times and go out of our way to operate extra flights—and it is very expensive for us to do that [as it means] to react in the last moment to sudden surges in demand.

One fact is essential to the airline industry and this fact is that the aircraft size is fixed. This [inflexibility of supply] has implications on the pricing level that very few people understand. If I don't keep selling until the last minute, my competitor wins. If I am out of seats in the month of August and my competitors will have seats and would sell at the price that they wish to sell at; they will have an easy ride while I have to reject all this demand and will not be able to serve my customers, and I will lose them. The best thing for the consumer is to always have a choice and once the consumers cease to have choice, they lose. So to preserve the choice for the customer, I have to have seats available—and that is what I do.

E And from the 20-year experience between 1998 and 2017, the trajectory of pricing of the average seat on MEA was downward, and this was better for the consumer, wasn't it?

Yes.

E How are MEA experiences concerning increased connections to Europe through LCCs when flights to Western or Eastern Europe are concerned? Do you have any Eastern European destinations on your target list?

European traffic is now segmented into two types of traffic. It is either direct or through Istanbul. Turkish Airlines and Turkish low-cost airlines have cleaned up [the market for connecting to] all the European stops. Lufthansa is now selling either direct to Frankfurt or long-haul: USA and Canada. [It's] the same thing with Air France. With Aigle Azure and Transavia (which launched Beirut services in 2017: Editor) there are low cost airlines to Paris, and we were not affected because we immediately adapted our pricing model and our commercial model. As long as the market is healthy and as long as growth is there, one has always room to adapt if you know how to apply the correct policies.

Right now, Eastern European destinations are far behind Western European destinations. But we are [present through code-shares]. We are code-sharing with Czech Airlines and are selling a lot of seats on their flights as they operate in this market. Czech Airlines and (Romania's) Tarom are part of SkyTeam and Lot (Polish Airlines) has started operating (flights to Beirut as of June 2019: Ed), and we are cooperating with them commercially.

E The impact of aviation on climate is an emotive topic; are protests or calls in Europe for climate change-related taxation of airline fuel a point of concern?

If you are in Sweden and want to visit Lebanon, how can you do it if you don't fly? It is their right to have clean air, and it is our duty to service the demand with technology that maintains clean air—but demand will always be the driver. If there are tourists in the Netherlands or Germany who want to visit Lebanon, they have to fly. These people can protest, but they will have to answer to the tourists who would like to visit Lebanon before we have to answer to them. We do not build airplanes, we try to find the cleanest ones, but we want to bring tourists to Lebanon.

> "We have built a robust airline with concentration on conservative growth. Our financial position is robust."

E You have been doing this well, and now Lebanon and all of us are in a situation where the airport has to increase its capacity. How is the projected expansion of Beirut airport in the near and longer terms impacting MEA?

It will be for the better. Our product is limited by the infrastructure of Beirut airport. The better the quality of service is at Beirut airport, the better it will reflect on MEA and we support the project.

E Will you, additionally to scheduled aircraft renewals, expand your fleet and your network with a view to ongoing improvement and later expansion of Beirut Airport or will you say, in terms of target market and strategy, let's do more of what we are good at and are doing already?

We are expanding our fleet. It looks like we are just replacing aircraft [in 2019 and the coming years], but that is not really true because the A321 will have 150 seats, while the A320 currently has 126 seats.

E And in the number of aircraft, you are looking at what total fleet size in the next few years?

We currently are at 18, and we may have one or

two more aircraft, but even with the equal number of aircraft [when comparing the fleet of the recent past to the future fleet], there is an immediate 20 percent increase in capacity. So [the overall capacity increase] may be in the order of 30 percent if we decide to add one or two additional aircraft.

E Would the newly ordered XLR jets be on top of that, increasing the fleet by four more jets in years from 2023 that Airbus announced as the year when it would begin deliveries of this model?

The four jets will be part of the fleet increase by two more jets.

E So the net increase of the fleet is looking to be two jets and the increase in capacity is to be 30 percent.

Yes.

E What can you say about your profit and performance data in 2018 and 2019 to date?

In 2018, we made less profit than in 2017, because all additional revenue that we made [last year] by carrying more passengers was eaten up by fuel costs. In 2018, we made $50 million more revenue, but fuel cost translated into $60 million increase in cost. In 2019, we are going to inverse this phenomenon, because the fuel cost has dropped and we will be able to enjoy the extra revenue that we are making in terms of profits for 2019 if everything goes as expected in the high season and in the rest of the year—2019 should be financially better than 2018. And this is needed at a time when we are investing in the fleet and taking the risk.

E How much is the total investment into the fleet that MEA is undertaking today?

I do not have visibility on this, but we are receiving nine new aircraft in 2020 and another nine new aircraft in 2021.

E A number quoted by Reuters reporting from the Paris Air Show was that the four XLR will cost something like $500 million in list prices—which are usually not the prices that airplane buyers end up paying—but is it correct to think that the total investment into replacement and expansion of the MEA fleet would amount to several billions of dollars?

Correct.

E In terms of looking forward into the next few years, we have the airport expansion, the fleet renewal and then, on another level, there are implications from the impending arrival of the new Electronic Trading Platform to Lebanon's capital markets next year, where the message from the governor of the central bank not long ago was that privatization should be pursued on MEA. How do you view this prospect?

I am not in a position to comment on this. But we are a strong brand and the public trusts MEA. We are competing and we are surviving and offer a quality product at rational prices.

E But when it comes to the financial side of privatization, much emphasis is being placed on corporate governance structures, due diligence, and all financial preparations for taking a company public. I surmise from what you just said that you cannot tell me if MEA has contracted any advisers or investment banks in this direction. Can you tell me, however, why you did not publish annual reports in 2018? I did not find them on your website where I saw the 2016 board of directors report as the most recent entry under financial statements.

(Asks "Aren't they published?" on phone with staff members: Ed)

2018 is not published yet, but the results that I gave you are correct. There will be around $10 million less profit [for 2018] due to the increase in fuel cost. We had about $50 million increase in revenue but the additional fuel costs [ate away at this].

E And results for the first five months in 2019?

The trend is opposite in terms of fuel. Now fuel cost has increased due to increased activity, but since the price [of fuel] has decreased, it has helped us to maintain our costs so the extra revenue we made we are seeing as moving to profits.

E Can you say how much profit for the period is higher when compared to the same period in 2018?

Profit so far for the first five months in 2019 is $6 million, but this is an estimate.

E Is this similar to how the profit was in the same period of 2017?

Hopefully better.

E In an earlier interview with an aviation magazine this year, you said that passenger increase was around 6.5 percent?

This is now much higher. Traffic is at the level of 11 percent.

E This is 11 percent up in the first five months of 2019 when compared to 2018?

Yes.

By Nassib Khoury

ARE WE GOING SOMEWHERE?


Hyundai for the Kona Electric_MY19


Porsche Panamera 4 E Hybrid


Volvo S90 Plug-In Hybrid

Hybrid and electric vehicles in Lebanon

Lebanon still lags behind when it comes to implementing eco-friendly solutions across the board. In the automotive industry this has meant little progress toward the adoption of electric vehicles, despite some positive movement this past year. In April 2018, the government announced under article 55 that those wishing to purchase a hybrid electric vehicle (HEV) for private use would pay 20 percent customs for a vehicle of any value; those purchasing an HEV for public use pay 10 percent. Fully electric vehicles (EVs) were exempted from customs fees and mecanique fees (the first year) altogether. This was a move in the right direction, but much more needs to be done before electric vehicles will become affordable and practical options for Lebanese. Car importers and users need to have substantial privileges in importing, selling, and buying these cars.

A first recommendation would be to reduce the customs for HEVs to a lower rate than 20 percent to incentivize their purchase. At the moment, for more basic models, there can be little difference between the HEV and combustion engine—sometimes the advantage even goes to the latter. Currently, car buyers pay 20 percent customs duty on vehicles valued up to $13,333; for vehicles above $13,333 they pay 50 percent on each additional dollar; this means that for low-income Lebanese there is no financial advantage to buying a hybrid, given that the cheapest option in the market right now is $18,700, without registration. The batteries are also expensive—the average cost ranges between $7,000 and $8,000—and have to be replaced after the eight-year mark, making this a future cost that EV buyers must factor in.

The second recommendation would be to give a bonus, as European governments do, in the form of cash backs, lower insurance rates, or—in cooperation with fuel stations—the ability to recharge the car for free for a year.

The third—and most difficult to implement—recommendation would be to improve infrastructure in the country to accommodate HEVs and EVs, ensuring there is countrywide access to charging stations (see article page 16). Gasoline is still a smarter bet for the average Lebanese user, given that it costs roughly the same to fill a tank as it does to charge an electric battery, yet the former takes less than five minutes compared to an hour or more for the latter.

PROMOTE IT AND THEY WILL BUY

Despite these obstacles, the last three years have seen more efforts from car importers to promote hybrid and electric vehicles. At the e-MotorShow in Beirut this April, car importers showcased a range of electric cars from the most basic to high-end models.

Porsche Center Lebanon has an interesting lineup with two flagships HEVs: the Panamera Hybrid and

the Cayenne Hybrid. Both cars have a plug-in hybrid system able to rely solely on the battery for a driving range of over 40 km. That means that any Porsche hybrid user would be able to commute in Beirut with zero emissions, zero consumption, and zero noise. Porsche Center Lebanon is also on the forefront of EV sales in Lebanon, with plans to import and sell the Taycan, a fully electric sedan by the beginning of 2020. The Taycan has a range of 450 km, meaning that any user could travel the length of Lebanon twice on a single battery charge.

Elsewhere in the German car segment, ETS F.A. Kettaneh S.A. has plans to import the Audi E-Tron, a luxury SUV with a range of over 400 km, by the end of 2019 or the beginning of 2020. T. Gargour et Fils, representatives of Daimler-Benz, are already selling plug-in hybrid vehicles like the E 350, the E 53 4M coupé and cabriolet, and seven-seaters like the GLE 450.

GAA & Co., the exclusive importer of Swedish car brands in Lebanon, are importing and selling two high-end Volvo hybrids. The XC90 and the S90 plug-in hybrid represent a serious alternative to German brands in terms of fuel-efficiency and eco-friendliness. In addition, Volvo Lebanon will also showcase a fully electric car in 2020, the Polestar 2.

In the British car lineup, starting this year, Saad & Trad have begun importing the Jaguar I-Pace, an electric SUV with a range of 470 km on a single charge.

The Japanese brand Toyota, represented in Lebanon by distributor BUMC, is a pioneer in HEVs. Toyota was the first manufacturer to mass produce a hybrid vehicle: the Toyota Prius. Today, Lebanese customers can buy the Toyota Prius but also the Rav 4 and Camry, both only available in their hybrid versions. Added to the entry level line in 2019, BUMC now imports the Lexus ES 300h and the RX 450h.

Korean brand, Hyundai, represented by Century Motor Company, was the first to import and showcase an alternative to the Toyota Prius—the Hyundai Ioniq. The Ioniq is an ideal car for taxis and private users, as it is not only fuel-efficient but also well-equipped. Century Motor Company has lately imported the Kona, a fully electric compact SUV with an impressive range of 450 km.

In the French car lineup, Renault country-representative, Bassoul-Hneiné, was the first to import an "affordable" EV, the Renault Twizy, available since 2017. At $18,700 the Twizy is the least expensive EV in Lebanon, but lacks in equipment and is designed for urban driving, with a limited range of 80 km. Following the Twizy, Bassoul-Hneiné imported the fully electric Renault Zoe in 2019, a higher-end vehicle and one of the only hatchback EVs available in Lebanon with a range of 210 km, capable of traveling the Lebanese coastline on a single charge.

Chinese brands sell cheaper than their peers. SIDIA, the representative of BYD in Lebanon, imports and sells the Yuan, a fully electric compact SUV available at a relatively affordable price starting at $34,410 (including VAT). Those Executive spoke to, indicated that Chinese brands were selling more and more in Lebanon; one possible reason for this increase is that these brands give Lebanese drivers the chance to have a well-equipped car at a competitive price. Chinese brands with hybrid and electric products have become game changers. A Yuan from BYD, for example, would cost 20 percent less than an American or a European alternative, like the Chevrolet Bolt EV, (albeit the latter's range and quality would also be substantially higher).

Chinese brands with hybrid and electric products have become game changers.

STARTING TO TAKE CHARGE

Other car importers in Lebanon will not import electric vehicles, such as Gargour Automotive Company and GABS, which represent FCA and Suzuki respectively. This, however, is not specific to the Lebanese context but part of the strategy of their mother companies, which are not working aggressively on HEVs or EVs. Rymco will not import the Nissan LEAF because it is not yet available for the Middle East market. Similarly, A.N. Boukather will not consider importing hybrid or electric cars in 2019 for many reasons, including: the strategy of the car manufacturers (Mazda, Ford, and Opel), poor infrastructure in Lebanon, and limited incentives for users.

For more accessible options—the majority of the brands listed above do not represent the mass market section of electric vehicles—Hyundai, Toyota, Renault, and Chinese brands like Trumpchi, offer HEVs and EVs ranging between $20,000 and $35,000. This range is still expensive compared to combustion-engine options. To make it more appealing, BUMC and other car importers like Century Motor Company, Porsche Center Lebanon, and GAA & Co give the customer eight to nine years warranty on the battery.

From going nowhere to going somewhere, the private sector in Lebanon is beginning to take charge when it comes to electric vehicles. In the coming years, especially with car manufacturers complying with new emissions and noise pollution regulations worldwide, there will likely be increased imports of HEVs and EVs to Lebanon and the country will have to prepare its infrastructure accordingly. Lebanon has to follow the world in terms of mobility, regardless of its slow adoption.

By Carlos Naffah

GETTING MOVING AGAIN

Photo Eddy Choueiry / Train Train

Lebanon needs to build a railway network

The absence of public transport in Lebanon has a substantial economic impact on the country, with congestion clogging the country's main transport arteries. Without a sustainable transport system in place, this will only get worse; the average delay per vehicle will nearly double and the average speed will be halved according to a 2015 working paper from the Issam Fares Institute at the American University of Beirut. The effect is multidimensional; there is no solution to traffic congestion woes without a public transport system in place. The backbone of any public transport system is a railway network for the transport of passengers and freight. It is, therefore, crucial to have railways—and timely too, given Syria and Iraq's reconstruction needs.

Several studies have attempted to quantify the economic impact of congestion caused by the lack of public transport, with estimates ranging between 5 and 10 percent of GDP. In a March 2018 press release announcing the World Bank's approval of a $295 million package to overhaul Lebanon's transport sector—the Greater Beirut Public Transport Project—Ziad Nakat, senior transport specialist at the World Bank was quoted as saying that, "In economic terms, the annual cost of traffic congestion is above $2 billion, representing a large impediment to growth and regional connectivity."

TOO MUCH PETROL

The absence of public transport is also fueling the high petrol bill that is negatively affecting the balance of payments, as petrol constitutes a large part of Lebanese imports. In 2017, Lebanon's exports amounted to $3.91 billion, and its imports to $20.8 billion—of which, $3.77 billion was for refined petroleum, one of its top imports. If the country develops public rail transport, it could significantly re-

duce fuel usage and emissions, if the latest technology—trains that run on non-emission hydrogen fuel cells—is adopted. Transport in Lebanon accounts for around 23 percent of the country's emissions of greenhouse gases, mainly from road transport, according to a 2016 Ministry of Environment report.

Many past opportunities to develop infrastructure projects in the country have been dismally missed. They included projects at the energy, waste management, water, and transport levels. In 2016, the French company EGIS rail conducted a feasibility study on three railway lines: 1) a Beirut-Tripoli cargo line to connect the ports of Beirut, Jounieh, and Tripoli; 2) a Beirut-Tripoli passenger line with eight trains per hour and a capacity of 2,000 passengers each; and 3) an intercity train between Beirut and Tabarja with eight trains per hour and a capacity of 1,200 passengers each. Since that date, the file has been sitting with the Council of Development and Reconstruction (CDR) with no action taken and no indication of why the file lies untouched. Likewise, there has been no action on the Tripoli–Syrian border railway link, which has been with the CDR since 2014. (There have been indications that the Chinese were interested in investing as recently as May this year, but no concrete steps have been taken.)

STIMULATE THE ECONOMY

Rehabilitating the railway network will have a positive impact on employment—currently local unemployment is estimated at around 25 percent. A new railway network would create thousands of jobs at no cost to the state as they will be supported by the private sector. The Lebanese government could also stimulate the economy by relinking the country to the region at a time when its neighbors are rebuilding their rail network—a regionally linked network to which Lebanon used to be connected. In March this year, Syria reopened its Tartous-Qalamoun line, while Iraq reopened its Baghdad-Fallujah line in late 2018, after years of war had brought both rail networks to a halt.

On a broader regional level, Chinese and French companies are leading many rail projects in Algeria, Egypt, Morocco, Qatar, the United Arab Emirates, Saudi Arabia, and Jordan. Lebanon should step in and take advantage of this unique economic opportunity to reestablish a railway network that was historically connected to the GCC and to Europe.

One hundred twenty-four years ago, railways connected the French port of Marseille to the port of Beirut as part of what is known as the Levant gate. French investment brought rail service to life backed by Swiss, German, and French technologies. It drew a chapter of cooperation between the West and the East, centered on Lebanon. Perhaps Lebanon should rewrite the same journey of cross-cultural and economic exchange by joining the Chinese "One Belt, One Road" initiative, a global development strategy launched by President Xi Jinping in October 2013, or by reconnecting the Levant region to Europe via a new Levant railway open to the southern part of Europe and North Africa via the Beirut and Tripoli ports. Only time will tell, but a political decision should be made quickly before Lebanon misses the train.

Carlos Naffah is the president of Train/Train, an NGO advocating for Lebanese railway rehabilitation and railway heritage preservation.

By Greg Demarque & Nabila Rahhal

LOST IN

A history in pictures

***Kan ya ma kan* (once upon a time), Lebanon had a well-developed railway network established by the different foreign authorities that governed the country before its independence (for more on trains in Lebanon, see article page 42).**

The first major rail line was developed during the Ottoman period in 1895 and ran from Beirut to Damascus. It was constructed by the French upon a concession from the Sublime Porte.

The second major rail line ran from Haifa, a port city in Palestine to Tripoli, north Lebanon and was constructed in 1942, during the second world war, by the Australian army.

In between those major lines, smaller lines or links were also developed. The first was constructed in 1904 and connected Riyaq (Rayak) in the Bekaa to Syria's Homs passing through Baalbek. The other was constructed in 1911 and ran from Tripoli to Homs to Aleppo.

Trains in Lebanon continued to function regularly until the onset of the civil war in 1975 when infrastructure gradually deteriorated. Since the end of the civil war, until now, there have been no functioning trains in Lebanon.

The photos in the photo essay were taken during an educational field trip organized by I Learn Academy. Information for text and captions was provided by Train/Train.

Swiss-manufactured SLM locomotive in Saidniel Station, central Bekaa

TRAINSLATION

Locomotive and train carriage in Riyaq, central Bekaa (above and below)

Interior of Chouit Araya Station

Chouit Araya Station, Mount Lebanon (above and to the right)

Riyaq (Rayak) Station doubled as a workshop for locomotives and included a rest house

■ Since the end of the civil war, until now, there have been no functioning trains in Lebanon.

Remains of train tracks in Mar Mikhael

The first major rail line was developed during the Ottoman period in 1895 and ran from Beirut to Damascus.

Remains of tunnel and tracks in Dahr el-Baidar, through which the Beirut-Damascus line used to pass

Baabda (Babda) Station

Manual train switch in Baabda

Old railway bridge in Mar Mikhael

By Zeina Hawa and Elena Haddad

BEIRUT'S FRIENDLIEST POTENTIAL

The case for increased cycling in Lebanon

Worldwide, the bicycle is making a comeback as part of the future of sustainable cities. Here in Beirut, despite appearances, there is the potential to foster a bike-friendly city. Beirut's small size, compact urban form, organic and narrow street structure, and the interconnectivity of neighborhoods make it an ideal city to cycle in.

Even the more seemingly chaotic aspects of the city, the double parked cars and near constant obstacles, actually work in favor of cyclists by slowing vehicles down. Sprawl, wide avenues, and fast moving vehicles are extremely challenging for cycling, but these barriers are nearly absent in Beirut. The case for cycling is even stronger in Tripoli, Saida, and Sour, all of which are smaller and flatter than the capital and remain unscathed from car-oriented infrastructure projects such as urban boulevards. Beirut has been disfigured by the latter, making it more difficult to travel by foot and bike, and in some cases splitting apart entire neighborhoods—known as community severance.

BARRIERS TO CHANGE

Despite the potential that exists, cycling is still not a common sight in Beirut. There are social and cultural barriers to cycling in Lebanon, such as associating bicycle use with poverty and the inability to purchase a car, or seeing cycling as a leisure activity rather than a form of transport. We at the Chain Effect, a non-profit promoting and facilitating the use of bicycles as a form of urban mobility, surveyed those who participated in Bike to Work 2019—the third edition of a day-long event that provides those willing to try cycling a free bike to use, as well as parking points and dedicated bike lanes—to see what barriers—perceived or otherwise—discouraged the use of bikes in the city. Safety was one of the biggest concerns, with 48 percent of the 165 respondents saying that they perceived cycling in Beirut as dangerous. Other barriers included the lack of affordable bike options, the poor infrastructure (no places to park bikes, no showers in workplaces), and few resources on how and where to buy bicycles.

Beyond these personal concerns, Beirut is still very car-centric, making it harder to foster a cycling culture. Larger establishments like malls and hospitals can be less receptive of cyclists and their bikes, given restricted parking and concerns about visual obstructions. In Downtown, a car blocking an entire lane of traffic is acceptable, but locking your bike on a street pole will cause security personnel to come running with clamours of *mamnou'* (forbidden). Driving is immensely facilitated and subsidised; on-street parking is cheap and available, and valet parking is common. Post civil war transport projects have prioritized the movement of vehicles at the expense of pedestrians and cyclists, implementing transport plans dusted off from the 1960s and 1970s with little regard for the current makeup of the city.

THE CASE FOR CITY CYCLING

There is, however, much potential for bicycles to contribute to Beirut's social, economic, environmental, and cultural development. The bicycle is a tool for better mobility, wellbeing, social cohesion, improved air quality, reduced environmental strain and, overall, better quality of life.

Take combating congestion as an example: Private car trips account for 69 percent of transport in the Greater Beirut Area (GBA), according to the

Ministry of Environment (MoE). The World Bank estimates that Lebanese lose 70 percent of their travel time in traffic delays due to traffic congestion, yet 50 percent of trips within the GBA are less than 5 kilometers, according to the MoE. The brevity of these trips means they have the potential to be taken via bicycle, with cycling infrastructure moving people much more efficiently—and at a fraction of the cost.

Countless studies have highlighted the enormous personal, public health, mental health, and air quality benefits that walking and cycling can bring. Regular cycling can help to combat sedentary lifestyles and obesity, as well as help lower the impact of transport on air pollution. In Beirut this is a particular boon, given high levels of air pollution affect 93 percent of Beirut's population, according to researchers at AUB, with motor traffic being the main source. Studies carried out internationally also find that bicycle commuters report being significantly happier or more satisfied than car or other commuters.

Economically, investing in cycling is a no-brainer, bringing enormous savings from reducing congestion, accident, health, space, climate change, and pollution-related costs associated with mobility. In 2018, the World Bank estimated the cost of Beirut's traffic congestion at over $2 billion. Individually, citizens spend a significant proportion of their salary on fuel, parking, and maintenance, according to the World Bank. Poorer households in general, suffer disproportionately from the car-dependent culture.

There are also spillover economic benefits from cycling. People on bikes tend to stop more and so spend more on average than people in cars. Marrying cycling with tourism in Beirut could impact other areas like food tourism and visitor numbers to cultural sites. Already, a number of small bike-based Beirut tours and touring companies have emerged in the last year alone, paving the way for similar initiatives.

Finally, cycling in Beirut is a political statement, a symbol of defiance and a means to reclaim the city in the face of an alarming trend of privatization. Its immense value in building bridges between communities should not be ignored.

THE WAY FORWARD FOR BEIRUT

Beirut can learn from decades of bicycle promotion experience in other cities. Planning bicycle infrastructure in a city that has none is an enormous opportunity to rethink how people move and create links in severed areas.

Data collection must be amplified for planners to understand the current baseline and potential changes. A long-term mobility strategy that places active travel at its heart is vital to build a city vision. Rather than cycling only, an inclusive vision that promotes active, healthy, and holistic streets, and communities, has wider benefits—organizations should push for solutions together.

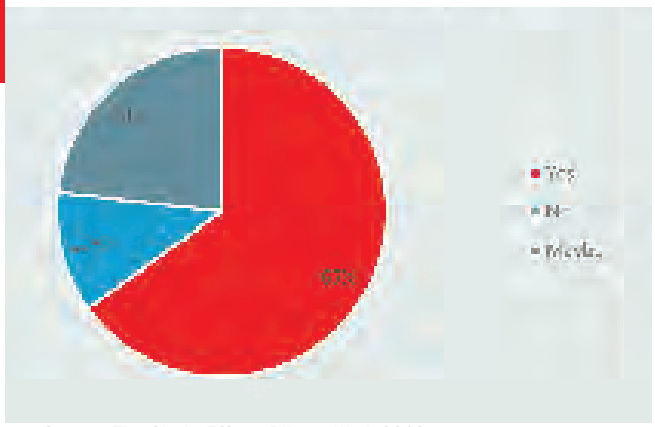
Planning bicycle infrastructure in a city that has none is an enormous opportunity to rethink how people move.

Efforts like Cycling 2030—an initiative launched by ourselves in 2018 to mobilize different stakeholders to collaborate over a cycling strategy—and TRACS—a coalition of active NGOs and experts in the transport sector (see Last Word page 72)—demonstrate an appetite for cross-collaboration, but must be supported with horizontal and vertical communication.

Without a metropolitan transport authority, it is important for Beirut to coordinate a long-term vision and network with neighboring municipalities to fully reap the benefits of cycling.

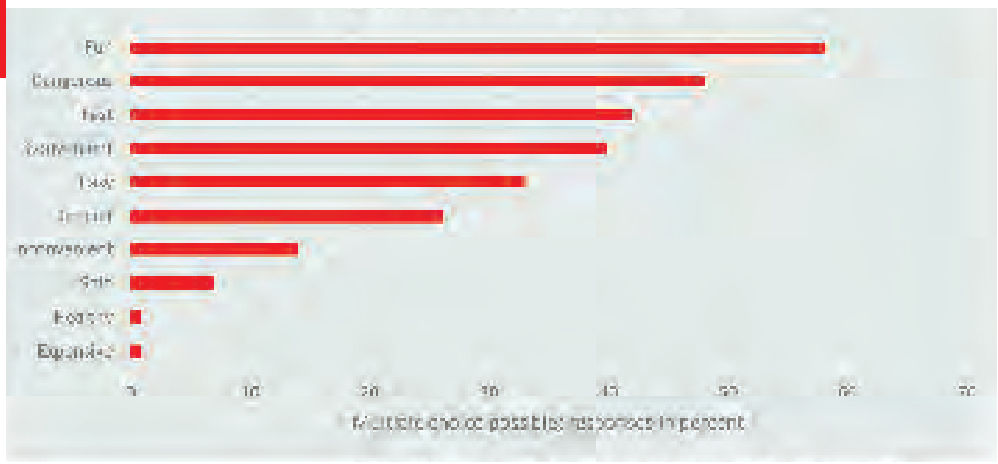
The availability of well-executed segregated bicycle infrastructure has a direct impact on increasing cycling rates. A bicycle network strategy will help prioritize infrastructure investment as opposed to current haphazard bicycle lane plans. Gradually reallocating road and parking space from cars to pedestrians,

WOULD YOU CONSIDER CYCLING MORE REGULARLY FOR TRANSPORT?



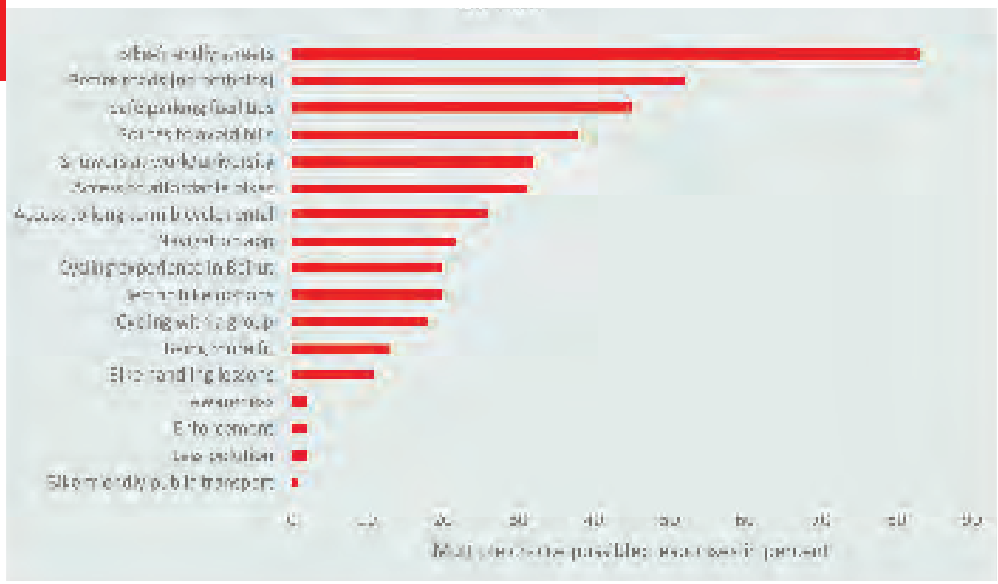
Source: The Chain Effect; Bike to Work 2019 survey

IMPRESSIONS OF CYCLING IN BEIRUT



Source: The Chain Effect; Bike to Work 2019 survey

APART FROM BIKE LANES, WHAT WOULD ENCOURAGE REGULAR CYCLING IN BEIRUT?



Source: The Chain Effect; Bike to Work 2019 survey

public spaces, and bicycles is complementary to other plans. Educational programs for youth and adults are just as important for a behavioral shift. Driving on congested main roads means bicycle-friendly streets remain lesser-known. Way-finding and alternative routes become valuable, especially in a city that is not entirely flat. Private companies have a role and benefit in facilitating active travel. Resources that facilitate car commuting can easily be redirected to cycling.

Long-time Beiruti cyclists notice the airs of change are beginning to gather strength. Cycling has become much more of a prominent topic than it was five years ago. The Bike to Work 2019 survey found that 65 percent of participants would consider utility cycling—using bikes as a mode of transport—more regularly. One thing is certain, the era of the car in the urban environment is coming to an end, making way for more sustainable cities in the future.

Zeina Hawa and Elena Haddad are the co-founders of The Chain Effect, an organization that promotes the bicycle as a sustainable and convenient form of urban mobility.

NEW INTERIOR

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Vintage® wine cellar

By Ralph Khairallah

THE OTHER DIGITAL REVOLUTION

Smart mobility in Lebanon

The first digital revolution was centered around the movement of data and information in the virtual world; the next digital revolution may very well be around optimizing the movement of people and things in the real world. The concept of "smart mobility" is the intersection between the real and the virtual worlds, and this is why it has been gaining traction of late.

Movement, like communication, is a core human need, and technology plays an integral role in how people move—mobilize—in the real world. This explains why mobility startups like UBER, Tesla, Lyft, Careem, DiDi, Ride, Lime, Grab, Deliveroo, and BlaBlaCar—to name a few—have become household names in their respective markets. People need to move more freely and efficiently to keep up with the pace of the information age.

In the case of Lebanon, our mobility infrastructure is plagued with years of neglect and lack of resources. A partial solution for the traffic congestion is to activate new smart mobility systems that tap into a widely abundant resource: unused car seats.

A 2015 environment ministry report cited a vehicle occupancy rate of 1.2, meaning the average Lebanese is driving a five-seater car to only transport themselves. Moreover, with the World Bank estimating there are around 1.6 million cars in Lebanon that means there are 6 million unused car seats crusing our roads pointlessly each day. This is the *raison d'etre* for new shared mobility solutions, and the reason why young entrepreneurs—including myself—launched Carpolo in 2017 for the Lebanese public. Our app works as a search engine for those unused car seats; it unlocks a sophisticated public transportation network using two simple resources: mobile devices and existing cars on the roads.

Unlike traditional mobility infrastructure systems—roads, bridges, railways—smart mobility solutions require less investment for the value created. For the general public, it might be as simple as downloading a mobile app; for companies, it might mean creating an internal carpooling system for staff; and for governments, investing in smart mobility initiatives can have exponential returns in economic, social, and environmental value.

When we look at the social value created, carpooling apps provide turnkey, smart mobility platforms that unlock a new mode of public transportation for subscribed cities and communities. Moreover, this smart mode of transportation can be activated immediately and requires no hardware and no land appropriation.

The value created as a result of implementing these kinds of smart mobility solutions is multifold. It decreases congestion in the city and makes movement less costly; thus allowing people, businesses, and governments to operate more efficiently.

The question remains: Now that we have proven than we are able to create value through smart mobility solutions, who are the stakeholders who should invest in long-term mobility solutions for Lebanon?

THE NEED FOR PUBLIC SUPPORT

Looking at the buses and vans that compete for passengers on Lebanon's roads, it is immediately clear that the private sector is not doing well when it comes to managing the country's chaotic mobility sector. Just like urban planning, smart mobility requires a holistic vision of the city's transport needs.

Our experience as a startup taught us that the private sector can spark the creation of smart mobility initiatives, but the catalyst to activating smart mobility as a mainstream solution will be the public sector. Mass adoption of new mobility concepts takes time, and will only come once this becomes part of a national program.

Low-cost/high-value mobility solutions are among the most important investments that any city or government can initiate nowadays to improve their infrastructure. Collaboration with the private sector to create mass adoption for such mobility concepts is the role of the public sector.

This is exactly what we aim to achieve in the long-run as we seek to establish new mobility habits in the minds of our users. However, apart from building a technology and updating it based on user feedback, startups have to invest resources to introduce new habits. Such investments require persistence and dedication to make a change—something that few early stage investors are willing to do. On the other hand, a big portion of public spending is directed toward traditional brick and mortar infrastructure solutions—projects that require time and resources to be implemented. These priorities will need to be reassessed in the near future. With smart mobility solutions, we save time and money, and build a basis for a smarter society in the future.

Collaboration with the private sector to create mass adoption for such mobility concepts is the role of the public sector.

Ralph Khairallah is the cofounder and CEO of Carpolo, a carpooling platform.