Growth in Worldwide Carsharing

An International Comparison

Susan A. Shaheen and Adam P. Cohen

Carsharing (or short-term auto use) provides a flexible alternative that meets diverse transportation needs across the globe while reducing the negative impacts of private vehicle ownership. Although carsharing appeared in Europe between the 1940s and 1980s, the concept did not become popularized until the early 1990s. For nearly 20 years, worldwide participation in carsharing has been growing. Today, carsharing operates in approximately 600 cities around the world, in 18 nations and on 4 continents. Approximately 348,000 individuals share nearly 11,700 vehicles as part of organized carsharing services (>60% in Europe). Malaysia is operating a carsharing pilot, with a planned launch in 2007. Another eight countries are exploring carsharing. Thirty-three carsharing expert surveys were identified on an international basis. Cost savings, convenient locations, and guaranteed parking were identified as the most common motivations for carsharing use worldwide. An international comparison of carsharing operations, including similarities and differences, is provided. Continued growth is forecast, particularly among new and emerging market segments, such as businesses and universities. Growth-oriented operators will continue to account for the largest number of members and fleets deployed worldwide. In addition, high energy costs; limited and expensive parking; ongoing diffusion of operational knowledge, benefits, and supportive technologies; and increased demand for personal vehicle access in developing nations will affect carsharing's growth and expansion.

In recent years, energy prices have become increasingly more expensive and volatile. This trend has increased auto ownership costs and uncertainty about future operating expenses. Moreover, parking in many of the world's largest cities is limited and costly and further increases expenditures on private vehicle. Many nations have adopted carsharing (or short-term auto access) as a means to reduce personal transportation costs and the negative impacts of widespread auto use, including congestion, inefficient land use, energy consumption, and emissions. Knowledge of carsharing and advanced technologies to support its operations has spread throughout Europe and North America and into Asia and Australia. Together, these factors are influencing carsharing growth across the globe in new and mature markets.

The principle of carsharing is simple: individuals gain the benefits of a private vehicle without the costs and responsibilities of ownership. Carsharing is most common in major urban areas where transportation alternatives are easily accessible. Individuals generally access vehicles by joining an organization that maintains a fleet of cars and light trucks in a network of locations (*1, 2*). Vehicles are most frequently deployed from lots located in neighborhoods, at transit stations, or at businesses. Carsharing members typically pay for use through hourly rates and subscription-access plans. Most carsharing operators manage their services with advanced technologies, which may include automated reservations, smart-card vehicle access, and real-time vehicle tracking (*3*).

Today, carsharing is a truly global enterprise, operating in approximately 600 cities worldwide (*4*). This paper provides a global perspective of carsharing growth and developments. In mid-2006, the authors obtained survey data from 33 carsharing experts from 21 countries; 28 national experts participated, representing 15 of 18 countries where carsharing is currently operating. Four experts represented nations where carsharing is being explored, one where carsharing is in a pilot phase, and one where carsharing previously operated. Entrepreneurs in three nations investigating carsharing did not respond to the questionnaire. Regional experts estimated member and vehicle totals for Asia and Europe. The authors collected membership and fleet totals for North America and Australia from each of the existing carsharing operators in those regions in July 2006.

This paper is organized in five sections. First, a historical overview of carsharing is provided, followed by a comparison of carsharing impacts, mainly from Europe and North America. Next, worldwide carsharing growth is examined. Then, a comparative analysis of carsharing operations worldwide, including similarities and differences among nations and regions, is presented. A summary of growth trends and anticipated developments concludes.

HISTORICAL OVERVIEW

One of the earliest European experiences with carsharing is that of a cooperative known as Sefage (Selbstfahrergemeinschaft), which started in Zurich, Switzerland, in 1948 and operated until 1998 (*5*). This early effort was motivated mainly by economics. Individuals who could not afford to purchase a car instead shared one. In Europe and the United Kingdom, a series of shared-car experiments were attempted but later discontinued: Procotip (France, 1971 to 1973), Witkar (Amsterdam, Netherlands, 1974 to 1988), Green Cars (Great Britain, 1977 to 1984), Bilpoolen (Lund, Sweden, 1976 to 1979), Vivallabil (Orebro, Sweden, 1983 to 1998), and a bilkooperativ (Gothenburg, Sweden, 1985 to 1990) (*6–9*).

The U.S. experience with carsharing began with two experiments: Mobility Enterprise (a Purdue University research program, 1983 to 1986) and the Short-Term Auto Rental (STAR) demonstration (San Francisco, California, 1983 to 1985) (*1*). The historical pattern of experimentation and closure was observed in at least six nations

California PATH, University of California, Berkeley, 1357 South 46th Street, Building 452, Richmond, CA 94804-4648. Alternate address for S. A. Shaheen: Institute of Transportation Studies, University of California, Berkeley, 1 Shields Avenue, Davis, CA 95616-8762. Corresponding author: S. A. Shaheen, sashaheen@path.berkeley.edu.

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(Switzerland, Sweden, France, the United Kingdom, the United States, and Japan). More successful carsharing operations worldwide began in Switzerland (Lucerne and Zurich) and Germany (Berlin) in 1987 and 1988, respectively (*1*).

Although the historic outgrowth of carsharing originated in Europe, a characteristic pattern of worldwide expansion has evolved as shared-vehicle systems have become more popularized. Early carsharing innovators in new markets frequently consisted of demonstration projects, with sunset dates, that aimed to exhibit carsharing operations and technologies. As these markets matured, many of these demonstrations were replaced with permanent carsharing services, although carsharing sometimes disappeared for some time before services reemerged. Not surprisingly, as carsharing has become more mainstream, expansion into new markets has consisted of fewer demonstrations.

COMPARISON OF CARSHARING IMPACTS

Numerous social and environmental benefits are commonly associated with carsharing, supported by an increasing body of empirical evidence. However, differences in data collection and study methods frequently produce inconsistent results, often with limited samples. Other possible reasons for these inconsistencies are location-specific variations and whether such studies examine innovators, early adopters, or early majorities. To date, no independent studies have been conducted on the quantitative impacts of carsharing in Asia or Australia.

Carsharing impacts can be categorized as transportation, environmental, land use, or social effects (*10–12*). Reported benefits for Europe and North America are summarized from a range of studies in Table 1. One major impact of carsharing on the transportation system is a reduction in vehicle ownership. According to recent studies, a carsharing vehicle reduces the need for 4 to 10 privately owned cars in continental Europe, 6 to 23 cars in North America, and 7 to 10 vehicles in Australia (*13*).

Earlier European carsharing studies indicate that 15.6% to 31.5% of participants sold a vehicle after joining a carsharing program; however, a more conservative range (23% to 26.2%) avoided or postponed a vehicle purchase (*14, 15*). A more recent report on carsharing impacts in Belgium and Bremen, Germany, indicates a slightly higher range (21% to 34%) of participants who sold a personal vehicle because of carsharing (*13*).

North American studies and member surveys suggest that 11% to 29% of carsharing participants sold a vehicle after joining a carsharing program and that 12% to 68% had delayed or forgone a vehicle purchase (*16–21*). Although the estimates of forgone vehicle purchases appear to be higher in the United States than in Europe, it is important to note that they are based on stated preference survey responses, which can be overstated and typically are less reliable than revealed preference data (e.g., actual number of cars sold after joining carsharing). Furthermore, U.S. auto ownership is much higher, so the potential to reduce the number of cars per household is presumably greater (*22*).

European studies indicate a large reduction in vehicle kilometers traveled (VKT), 28% to 45% (*13*). VKT reduction data range from as little as 7.6% to 80% of a member's total in Canada and the United States (*21–25*). Estimates differ substantially between members that gave up vehicles after joining a carsharing program and those that gained vehicle access through carsharing in Europe and the United States (*21, 23–27*). The average reduction in VKT is calculated as 44% per carsharing user across North American studies.

Furthermore, reduced vehicle ownership and VKT [or vehicle miles traveled (VMT)] lower greenhouse gas (GHG) emissions as trips shift to transit, bicycle, and walking. In Europe, recent carsharing studies estimate that the average user's carbon dioxide emissions were reduced 39% to 54% (*13*). Many carsharing organizations also include low-emission vehicles, such as gasoline–electric hybrid cars, in their fleets (*12, 23, 24*). Carsharing members also report a higher degree of environmental awareness after joining a carsharing program (*21*).

Finally, carsharing shows evidence of beneficial social impacts. Households can gain or maintain vehicle access without bearing the full costs of car ownership (*12, 28*). Carsharing offers a pay-as-you-go alternative for individuals and families who may require only periodic access to an automobile. Depending on location and organization, the maximum annual distance up to which carsharing is more cost-effective than owning or leasing a personal vehicle is between 10,000 and 16,093 kilometers (*28–30*). Low-income households and college students also can benefit from participating in carsharing (*10*).

The results of nearly two dozen studies have demonstrated that carsharing is a flexible alternative that can be used in various contexts to increase mobility by serving as a missing link, reducing dependence on private vehicle ownership, lowering vehicle emissions and energy consumption, and encouraging active lifestyles by interfacing with bicycle and pedestrian modes.

WORLDWIDE CARSHARING GROWTH

Although modern carsharing traces its evolution to Switzerland and Germany, this once-novel concept has expanded to include four continents. While central Europe remains an epicenter of carsharing activity, other growing markets have developed in northern Europe, North America, Asia, and Australia. In this section, a regional comparison of worldwide carsharing growth (members and vehicles) and trends over time is presented.

Today, carsharing has grown to include approximately 600 cities around the world, in 18 nations and on 4 continents (*4*): Austria,

TABLE 1 Carsharing Benefits by Region

Region	Number of Vehicles Replaced by One Carsharing Vehicle	Participants Who Sold Private Vehicle After Joining Carsharing (%)	Participants Who Postponed or Avoided Vehicle Purchase Because of Carsharing (%)	Vehicle Kilometers Reduced Because of Carsharing (%)
Europe	4–10	15.6–34	23–26.2	28–45
North America	6–23	11–29	12–68	7.6–80[a]

[a]Average of 44% across studies.

TABLE 2 Regional Overview of Carsharing Operations

Region	Carsharing
Asia	Asian member-to-vehicle ratios are estimated at 26:1. Experts in Singapore reported that the largest market segment is neighborhood residential, linked to rail. Business is the largest market segment in Japan. Asian experts indicated that on-street parking is unavailable, and parking is not offered as a form of nonmonetary support. Although there was an initial emphasis on electric vehicles (EVs) in Japan, conventional and low-emission automobiles are now the predominant fleet type in Asia. In Japan, several recent mergers have resulted in the formation of fewer, larger nationwide operators. In Singapore, NTUC Income Car Co-Op and WhizzCar support user cross agreements, enabling members of WhizzCar and Car Co-Op to access each program's vehicles (*31*). Since carsharing's inception in Asia, operators have emphasized advanced technology and logistical operations, using various technologies: telematics to communicate between vehicles and shared-vehicle management systems, Global Positioning System vehicle tracking, vehicle access through smart cards, mobile phone vehicle entry, and reservations via short message services.
Australia	Australian operators estimate member-to-vehicle ratios at 17:1. Experts indicated that neighborhood residential is the largest market segment followed by business. Australian experts also reported market diversification in college, business, and planned community markets. Australian experts indicated that free on-street parking is a form of nonmonetary support. Operators also have access to dedicated carsharing parking zones. Experts reported that it is difficult to obtain insurance for younger and international drivers. Although Australian operators have followed a technological evolution similar to North America and Europe, Australian organizations have quickly adopted fully automated systems (in less than 3 years).
Europe	Germany and Switzerland distinguish themselves with higher member-to-vehicle ratios: 33:1 and 36:1, respectively. Average European member-to-vehicle ratios are estimated at 28:1. European experts indicated that neighborhood residential is the largest market segment followed by business, except for in Austria and Sweden. Experts reported increased market diversification over the next 5 years. Although the majority of national experts indicated that free and reduced on-street parking is a form of nonmonetary support, on-street parking is not widely available to operators in France, Spain, and Switzerland. Four countries (Austria, Belgium, Italy, and United Kingdom) have dedicated carsharing parking zones. Diesel and gasoline vehicles dominate European fleets. Experts in the United Kingdom indicated that obtaining insurance for younger drivers and older adults is challenging. In Europe, many operators have evolved from manual operations to partially and fully automated systems.
North America	The United States maintains the highest worldwide member-to-vehicle ratios (40:1). North American average member-to-vehicle ratios are estimated at 35:1. North American experts reported neighborhood residential as the predominant market segment, followed by business. Experts also indicated ongoing growth in the college and business markets over the next 5 years. Free and reduced cost on-street parking are forms of nonmonetary support. Although a few research programs use EVs, most operators use gasoline vehicles, with gasoline–electric hybrids representing a growing portion of U.S. fleets. Although it is becoming less challenging, many operators find it difficult to acquire affordable insurance for younger and low-income drivers. In North America, the majority of organizations have evolved from manual operations to partially and fully automated systems. As of 2005, 70% of U.S. organizations used fully automated systems, and 73% of Canadian operators deployed partially automated systems. For more information, see Shaheen et al (*3*).

from 23:1 to 36:1 (*32*). In the United States, the rise in member-to-vehicle ratios has been more dramatic, steadily rising from approximately 7:1 in 1998 to 64:1 in mid-2005 (*3*). Today, German member-to-vehicle ratios are estimated at 33:1.

Experts ascribe higher member-to-vehicle ratios to inactive members in Switzerland and a combination of inactive users and growth in corporate memberships in Germany. In the United States, higher ratios are attributed to greater market diversification, resulting in larger groups of business or fleet users, who have vehicle access throughout the day, and fewer active members who rely on carsharing as a form of mobility insurance (*3, 10*). Furthermore, the double counting of members who are both individual and business or fleet users can increase member totals. Finally, individuals who join more than one carsharing service to increase their overall vehicle access in some U.S. cities may also create higher average ratios.

Since July 2005, U.S. member-to-vehicle ratios have dropped from 64:1 to 40:1. Today, greater vehicle use among members, growing carsharing awareness, and increased vehicle access (resulting from growth in the number of available lots and vehicles in major cities, particularly those where multiple providers operate) appear to increase usage rates and lower average member-to-vehicle ratios. Ratios also may be falling as a result of venture capital investments received by two major carsharing operators in summer 2006. It is hypothesized that national for-profit carsharing organizations were interested in demonstrating growth to potential investors through increased member totals. Because of the infusion of private capital into these operations, average member-to-vehicle ratios have fallen. This decrease may be indicative of increased operator focus on profit performance and the encouragement of higher and more regular vehicle use among members. Finally, more inactive members—who previously joined carsharing largely as mobility insurance—may have discontinued membership, particularly as monthly member fees have become more common.

Market Segments

With a few notable exceptions, most national shared-vehicle experts indicated that neighborhood residential is the predominant carsharing market, followed by business. These experts represent approximately 80% (12 of 15) of the nations that responded to the worldwide survey (Australia, Belgium, Canada, France, Germany, Italy, Netherlands, Singapore—primarily residential complexes linked to rail stations—Spain, Switzerland, the United Kingdom, and the United States) (*31*). In contrast, Austria specified business as its predominant market. Although Japan and Sweden both indicated business as the largest segment, Japan specified planned communities and Sweden listed neighborhood residential as its second-largest market.

Specialists in Austria, Japan, the Netherlands, and Singapore indicated no expected change in existing markets over the next 5 years. Of the responding nations, 60% (9 of 15) reported increasing market diversification in the next 5 years. Experts in Australia specified developing college, planned community, and business markets. North American authorities indicated ongoing growth in the college and business market segments (*3*). European experts specified a wide array of market diversification, varying by country (e.g., expansion of older adult and planned community markets

in France, a developing low-income market in Sweden, and growth in planned communities and businesses in the United Kingdom).

Survey results indicate that except in Austria, Japan, and Sweden, worldwide carsharing activities emphasize the neighborhood residential market. Over the next 5 years, greater market diversification is predicted in Australia, North America, and most of Europe.

Parking

One of the factors limiting carsharing expansion is the development of a dense network of lots for carsharing users, such as on-street and transit-based parking (*33, 34*). Thus, parking typically represents a key area of interest for most carsharing programs around the world.

On-street carsharing parking is generally available in North American and most European countries, with a few exceptions (Table 3). Approximately 33% (5 of 15) of nations responding to the survey (France, Spain, Switzerland, Japan, and Singapore) indicated that on-street carsharing parking was not available. Additionally, numerous experts reported that operators had access to dedicated carsharing parking zones in 40% of the responding nations (Australia, Austria, Belgium, Italy, the United Kingdom, and the United States).

Although on-street parking is free in a few nations, it usually consists of a combination of free and reduced-cost parking. The methods used for calculating parking costs vary considerably, including a flat monthly fee and variable rates depending on market prices (e.g., residential permit rates, forgone meter revenues, and cost recovery for transit station parking—mainly operations and maintenance). In some cases, conversion charges (i.e., costs associated with removing meters, striping curbs, and so on) and fees for administrative overhead are also added.

The vast majority of world experts (93.3%—all nations except Spain) indicated that operators had access to off-street parking in their countries. However, one European expert indicated that access to off-street parking was limited.

Parking is a common form of nonmonetary support for carsharing worldwide. With the exception of the Asian and three European countries (Austria, France, and Spain), 66.7% (10 of 15) of responding nations provide economic assistance to carsharing operators in the form of parking. Respondents from Australia indicated that application procedures to apply for parking spaces are often cumbersome. Furthermore, the lack of legal definitions and restrictions for carsharing has created challenges for legal shared-vehicle parking in Italy. Experts from every nation in Asia and North America and from five countries in Europe (Austria, Belgium, France Italy, and the United Kingdom) indicated that supportive parking policies are a key opportunity for carsharing in their countries.

Vehicles and Fuels

Results of the survey and a literature review indicate that smaller compact and hatchback vehicles dominate the world's carsharing fleets. Some fleets in Europe, Singapore, and the United States offer sport utility vehicles (SUVs) and luxury cars (*31*). Although the range of total vehicle models offered by carsharing organizations worldwide differs somewhat, fuels and engine technologies used notably diverge.

Expert respondents in Australia, Europe, North America, and Singapore indicated that carsharing fleets are composed of primarily conventional gasoline vehicles. Although the initial emphasis in Japan was on electric vehicles (EVs), conventional and low-emission automobiles are now the predominant fleet type in Asia. Gasoline–electric hybrid vehicles are popular among operators in Singapore, but conventional gasoline cars predominate. Although the United States has a history of EV demonstration projects, they have been limited to

TABLE 3 Overview of Worldwide Carsharing Parking Policies

	On-Street Parking	Cost	Dedicated Parking Zones	Parking as Nonmonetary Support
Asia				
Japan	No			No
Singapore	No			No
Australia				
Australia	Yes	Free	Yes	Yes
Europe				
Austria	Yes		Yes	No
Belgium	Yes		Yes	Yes
France	No			No
Germany	Yes	Free and reduced		Yes
Italy	Yes	Free	Yes	Yes
Netherlands	Yes	Free and reduced		Yes
Spain	No			
Sweden	Yes	Free and reduced		Yes
Switzerland	No			Yes
United Kingdom	Yes	Free and reduced	Yes	Yes
North America				
Canada	Yes	Free		Yes
United States	Yes	Free and reduced	Yes	Yes

station car operations and a few carsharing research initiatives (i.e., Intellishare and ZevNet) (*31, 35*).

The dominant alternative fuel technology incorporated into fleets in North America and Singapore is the gasoline–electric hybrid. Australian operators reported that hybrid and other alternative fuel vehicles were too expensive. Although much less common in Europe, hybrids represent a developing fleet segment. Europe deploys diesel (and, to a lesser extent, biodiesel) as its leading alternative fuel vehicle and is unique in this feature worldwide. Indeed, one shared-vehicle program in Spain (Catalunya Carsharing) only uses diesel and biodiesel fuels.

Worldwide experts provided similar reasons for why alternative fuel vehicles represent a smaller percentage of overall carsharing fleets: hybrid vehicles are considerably more expensive, and other alternative fuel vehicles (e.g., EVs) pose too many operational barriers (e.g., limited vehicle range, fewer fueling stations, and member inexperience).

Insurance

Vehicle insurance is a major operational cost of carsharing. Twenty-eight experts from countries with current carsharing operations indicated that insurance is obtained through private-sector insurance carriers; two experts from Australia and Canada reported that carsharing insurance also is obtained through governmental policies. The number of nations providing governmental insurance (directly or indirectly, through partnerships or monetary support) is expected to be larger with government fleets included.

Specialists from only a few countries (Australia, Canada, Italy, and the United States) indicated that finding insurance was an ongoing problem. One expert from France reported that identifying an insurance provider is no longer a problem; however, it was a significant challenge early on. Experts from four countries reported that securing insurance for younger drivers was an issue (i.e., under 25 in Canada and under 21 in Australia, the United Kingdom, and the United States) (*3*). Experts from Australia, the United Kingdom, and the United States also reported difficulty obtaining insurance for international, older, and lower-income drivers, respectively.

Technology

Advanced technology continues to play an important role in carsharing worldwide. However, differences in technological evolution exist between Asia and the other three continents. In Europe and North America, many operators have evolved from manual operations to partially automated (i.e., automated reservations via touch-tone telephone or Internet) or fully automated systems (i.e., automated reservations, integrated billing, and advanced vehicle-access technologies). In 2005, only 11.5% of North American operators continued to use manual operations, compared with 37.5% in 2002. Fully automated systems were more predominant in the United States (accounting for 70% of operators) compared with 73% of Canadian operators, which used partially automated systems (*3*). Organizations that still use manual operations in North America and Europe tend to be smaller.

Australian operators have followed a technological evolution similar to that in North America and Europe, advancing from manual and partially automated systems to more sophisticated ones. Although Australian operators have followed a comparable evolution from lower to higher technology levels, they differ from their European and North American counterparts. Within just 3 years of launching, Australian operators have adopted fully automated systems.

In contrast, Asian operators launched with fully automated systems. Technology among Asian operators often has emphasized logistical operations, through telematics to communicate between vehicles and shared-vehicle management systems, Global Positioning System vehicle tracking, smart card vehicle access, mobile phone vehicle entry, and reservations via short message services (*29*).

Where carsharing currently exists, continued technological advancement is forecasted: for example, more open-ended bookings (i.e., no fixed reservations), instant access (i.e., no reservations), one-way rentals (i.e., vehicles can be returned to a different lot), satellite radio, prepaid usage cards, and interoperability. The extent to which automated technologies are deployed in new carsharing markets will vary by region and external factors, such as phone and Internet availability and labor costs. In the developing world, the lack of reliable phone or Internet service may encourage manual or partially automated systems or limit potential membership to people who have access to such utilities. Services such as vehicle delivery and one-way trips also may be more economical in some of the nations where lower labor costs make fleet management less expensive.

Summary

Key factors that characterize worldwide carsharing operations include member-to-vehicle ratios, market segments, parking approaches, vehicles and fuels, insurance, and technology. Germany, Switzerland, and the United States are distinguished from their international counterparts with higher member-to-vehicle ratios, largely because of market diversification and fewer active users in the United States and Germany and inactive members in Switzerland.

The two predominant carsharing markets in Australia, Europe, North America, Singapore, and the United Kingdom are neighborhood residential and business. In contrast, business is the primary market segment in Austria, Japan, and Sweden, followed by planned communities and neighborhood residential in Japan and Sweden, respectively. On-street parking in most carsharing countries (except in Asia, France, and Spain) is a common form of nonmonetary operator support. Although obtaining insurance is not broadly perceived as a problem worldwide, policies are expensive in most markets. Insurance also can be difficult to secure for particular market segments (e.g., younger drivers) in Australia, Canada, the United Kingdom, and the United States. Although differences in alternative fuel vehicle use are distinctly regional, most worldwide fleets are composed of conventional gasoline automobiles (except in Japan and Spain). Finally, carsharing operators in Asia tend to be more driven by technology, particularly during the start-up phase, whereas technology has advanced progressively (i.e., from manual or partially automated to fully automated systems) for carsharing operators in Australia, Europe, and North America.

CONCLUSION

Although modern carsharing traces its roots to Switzerland and Germany, this once-novel concept has expanded worldwide to operate in 18 nations on 4 continents. While central Europe remains a key node of carsharing activity, other growing markets have developed in Europe, North America, Asia, and Australia. Carsharing also is being explored in eight countries, and Malaysia plans to

launch a shared-vehicle program in 2007. An estimated 348,000 carsharing members worldwide now share nearly 11,700 vehicles.

Current worldwide developments include

- Ongoing growth (except in Austria);
- Growing awareness;
- Entrants into new and existing carsharing regions, such as Australia and Malaysia;
- Consolidation of operators in East Asia, notably in Japan; and
- The release of the Suzuki Every, a carsharing vehicle factory-equipped with a radio-frequency identification (RFID) reader to identify multiple users and telematics to communicate with fleet management systems.

Continued growth and market diversification in business, fleet, transit, and university carsharing markets (particularly in North America) are projected. Growth in neighborhood carsharing also could result from emerging standards (e.g., vehicle access technologies) that facilitate linkages or cross-usage agreements among regional organizations. These developments could increase cooperation among carsharing operators and other partners, such as public transit (e.g., smart card ticketing and access technologies), businesses, rental car companies, hotels and resorts, and shopping outlets (e.g., Migros M-Budget in Switzerland).

Carsharing is expected to become increasingly integrated into urban transport and land use strategies in the future (e.g., through zoning variances for developers and supportive parking policies). Competition among operators in the same region will continue to increase, particularly in Germany and the United States, resulting in enhanced services and customer choice and, in some cases, mergers and company closures. Recently, several transnational carsharing ventures have occurred: Zipcar in the United States and Canada, Greenwheels in Germany and Netherlands, Cambio Car in Germany and Belgium, and CityCarClub in Sweden and Finland. This trend is reshaping carsharing as more organizations cross national boundaries.

Growth-oriented organizations will continue to account for the largest number of members and fleets deployed. In the future, carsharing expansion will continue, particularly in newer markets. New entrants are likely in Ireland, Israel, Portugal, and New Zealand. Carsharing is expected to emerge in developing countries in Asia and Africa, such as China, Kenya, South Africa, and Zambia. Carsharing operations also are expected to evolve differently in the developing world because of lower labor costs, potential differences in technology use, and organizational structure. Inexpensive labor, for instance, could encourage and facilitate one-way trips as well as vehicle deliveries to customers' homes or offices.

Combined with external forces (e.g., high energy prices and demand for innovative solutions to urban parking constraints and roadway congestion), unfulfilled market potential in new and existing markets is expected to continue to drive carsharing expansion. It will be fueled by the ongoing diffusion of shared-vehicle awareness, expertise, and technologies, which will continue to support carsharing operations in most new and existing locations across the globe.

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