chapter 1

The Fundamentals

The term “affordable housing” has a number of connotations and definitions. Some regard it simply as housing for low-income people. Others interpret “affordable housing” as any form of directly or indirectly subsidized dwelling. The formal definition, however, refers to the share of a household’s income that is spent on lodging. An expenditure of 32 percent of a household’s gross annual income on mortgage principle, interest, taxes, and utilities has become a recognized measure of how much people should spend on rented or owned adequate and safe housing. Housing is, therefore, affordable when households with income at or below the city, community, or state median income spend no more than 32 percent of their gross annual income on shelter. Along with societal and economic changes, the growing need to house a segment of the population affordably has accelerated in recent decades. These changes and further elaboration of the affordability definition, the parties involved in housing production, and their interests will be outlined in this chapter.

SOCIETAL TRENDS, CHALLENGING TIMES

The end of World War II marked a turning point in the way North Americans housed themselves. Many demographic, lifestyle, economic, and cultural trends that had begun in this postwar period, left their imprint on the residential landscape for decades. To understand the reasons for the emergence of affordable housing as a key societal concern, one needs to recall the causes of the challenge.

The New Family

The transformation of the North American family not only affected society's demographic makeup but also revealed many indirect links to the rise in the need for affordable housing. After World War II, home builders regarded their clients as a homogeneous block. The common household was made up of a working father, a housewife, and their children. This family structure, with its space needs and lifestyle, influenced designs offered by architects and builders. The three-bedroom, single-family detached home with a garage became a recognized feature across the continent. Housing solutions for families who did not fit this social model, it was assumed, would be found in apartments.

Decades later this demographic makeup changed. The proliferation of birth control methods, along with new lifestyle and cultural tendencies, gave rise to a new societal composition. The share of single-person households and single-parent families grew. The number of seniors also increased. These new households, with a single breadwinner could not accumulate the means to purchase a home. They could also no longer rely on publicly funded housing, since in North America, federal and local authorities had limited their participation in sheltering lower income households. Many of these households were left to fend for themselves, often relying exclusively on rental accommodations, the stock of which dwindled in many cities. Acquiring a home for those who had means became an even greater challenge, as the product itself swelled in size and, as a result, the cost became financially out of reach.

Very Big Homes

One of the most noticeable factors to affect affordability was the transformation of the product itself — the home. If the objective of postwar buyers was to purchase a modest, comfortable shelter, the residence, it seems, had now become a mark of social status. The swelling size of homes paradoxically paralleled the decline in the number of people constituting a household. Clients wanted more space, and builders were eager to provide it. The postwar 800-square-foot (80-square-meter) bungalow, with an attached, single carport, that dots North American suburbs gradually expanded to an average of 2,000 square feet (200 square meters) with a two- or three-car indoor parking garage.

Several other phenomena caused the cost of a home to rise. Some had to do with market supply-and-demand cycles and others with buyers' choices. As the size of homes grew, processing and transporting more building supplies made them more expensive to construct. Labor costs also rose, as the increased housing demand put pressure on a declining number of tradespeople. Unfortunately, the homebuilding industry, which was accustomed to an on-site, stick-built construction method, did not switch to construction methods that used prefabricated components for the sake of cost efficiency.

Compared with earlier decades, the science of homebuilding improved. Homes constructed today include higher-quality products and utilities. Windows or heating systems, for example, are superior by far to those installed a few decades ago. New spaces and functions have been added to home design as lifestyles changed. The kitchen has grown in size to become the home's social center and a showcase for costly appliances. Bathrooms with bathtubs, shower stalls, and floor-to-ceiling tiles, at times on each level of the house, have become the norm. Other added functions and amenities, though, have taken a financial toll. Media centers and home offices are part of the homebuilder's new vocabulary. In addition to the initial high cost of building a home, ongoing maintenance and upkeep expenses have grown. The cost of cable TV, Internet hookup, and telephone lines has to be added to the monthly mortgage payments, utility bills, and municipal taxes.

The linking of a single dwelling to more utilities also meant that infrastructure as a whole had to be expanded and, as a result, development costs rose. The tacking on of a large garage to the side of each dwelling meant that lots and the surrounding roads were extended. Their construction quality ameliorated as well. Water lines supplying fire hydrants and homes, storm sewers and house drainage systems, the electrical grid, telephone, Internet, and cable TV are among the services buried below ground. The cost of building infrastructure, which decades before was financed and built by municipalities and recovered by them through taxes, is now taken on by developers. They, in turn, transfer these costs to homebuyers. By the late 1970s, the cost of serviced land rose from 12 to 25 percent of the cost of a typical North American home, making it harder for people to afford them.

New Economic Realities

One of the factors that affected people's ability to own a home was a change in North America's economic climate and the structure of the labor market. To understand the significance of the change, one needs to trace the homebuying process back to the post World War II era.

Lack of housing after World War II initiated government market intervention through economic stimulation packages and other incentives. Loans at favored rates were given to returning veterans and new homebuyers. Gradually, government limited its intervention, and the business of financing and housing the majority of North Americans became a private affair. Banks stepped up to the task by establishing, under government supervision, their own criteria for lending money.

Several principles guided the process. The first had to do with the amount that a homeowner could borrow. It was established that a household needed to be able to save about 25 percent of the dwelling cost as a down payment on the property. It was also decided that the amount borrowed would not be greater than 25 percent of the household income, as other family expenses, such as food, education, and retirement savings needed to be accounted for. To reduce its risk, the lender made sure that the borrower had secure employment. In the stable work environment of the 1950s and 1960s, however, this was not a concern. Traditional households that were headed by a single breadwinner who held a steady job were welcomed by bankers, and this method of privately financing projects and individual homes flourished.

Things began to shift in the 1970s. Several trends influenced the way mortgages were awarded by private lenders. The return of women to the labor force improved the household's financial standing. Since households had more disposable income, bankers, with government approval, raised the allowable borrowed amount to 32 percent of household income. As a result of their increased spending abilities, buyers sought to buy larger, more comfortable, and expensive homes. Work outside the home by the two heads of the household also influenced the family's lifestyle. Maternity leave, for example, had to be shortened, since the monthly mortgage payment could not be paid with one paycheck.

Another more influential process happened as a result of the transformation in the labor market. Foreign competition contributed to the transfer of many labor-intensive, low-paying jobs offshore. Recessionary cycles eliminated another factor that was necessary for a prospective homeowner to qualify for a mortgage—job security. Watching their bottom lines, corporations did not hesitate to lay off employees when profits declined. Long-term, stable, and secure employment in many sectors became a thing of the past. For many young, first-time homeowners, who lacked high-earning skills, it was harder to accumulate the means to own a home.

The widening gap between household income and house price was another barrier to homeownership. In the decades since World War II, income growth in North America has not been distributed evenly, despite an overall increase. In general, a close scrutiny of studies and statistics suggests that those earning the least income saw little change in their net worth. The wealthiest segment of the population, on the other hand, saw a significant increase in their net worth. Put simply, today's entry-level incomes do not allow for the acquisition of a down payment and a home loan to acquire homes in most urban centers. They do not permit low-income renters to become homeowners (Ford Foundation, 1989).

Not In My Backyard

Housing people affordably poses economic and technical challenges. Initiators of such projects have to overcome another barrier — community opposition. Such opposition is often referred to as "Not In My Back Yard" (NIMBY) syndrome.

Most people like to maintain the status of their living environment. A fear of the unknown can make individual citizens unite in a vocal and organized opposition to any development that upsets the status quo. There are many reasons to oppose any sort of development. Increase in traffic, reduced personal safety, and "attracting the wrong kind of people" are some often-heard motives. Construction of affordable housing raises another fear—an economic one. Along with the rise in the cost of housing, the home is now considered to be an investment and savings portfolio as well as a place to dwell. Homeowners not only hoped to use their dwellings but also to see the monetary value of them rise unlike other consumption goods. They cannot afford to put their investment at risk.

Proposing homes with a different density or architectural character is likely to prompt community resistance. Fearing the possibility that lower-cost housing will be constructed in their municipality, some cities write zoning bylaws that make building affordable homes impossible. Wide lots, low density, large footprints, and indoor parking have been legislated in many places, making the initiation of lower-cost housing projects impossible. Despite their desire to see affordable homes built in their community and their sympathy to the cause, elected municipal leaders fear reprisals at election time. "Not In My Term In Office" (NIMTIO) is a sentiment voiced in many places.

Whether a community can prevent an individual, a building firm, or a nonprofit group from building affordable housing by legislating zoning bylaws has been challenged at times in the courts. On most occasions, the challengers succeeded, and affordable homes have been given the go-ahead.

FAMILY LIFE CYCLE AND HOUSING

The ability to accumulate the funds necessary to acquire and to maintain a home relate to one's personal value system. Some regard homeownership as an important life goal, whereas others do not see it as a necessary personal milestone and choose to be lifelong renters. The place of homeownership in a list of personal priorities varies from culture to culture. In most cultures, however, the notion of owning a home is highly valued. It affects personal and family life, as well as provides security of tenure. Unlike renters, homeowners can rest assured that they will neither have to relocate upon the expiration of their lease, nor be subject to ongoing increases in rent.

Homeownership, for most, is also a means of accumulating wealth. Homeowners are in a position to build equity through mortgage amortization, which is something that renters cannot do. Over time, depending on location, the property value may appreciate and, as a result, the owner's equity increases.

Homeowners have greater control over their dwelling's environment. More than renters, they can easily have the dwelling designed to suit their needs, and they have no restrictions in modifying it years later. Unlike renters, homeowners can use their property as an income generator. By renting portions of it or the entire dwelling to someone else, they can enjoy a flow of income. Homeownership also benefits the community at large by increasing individual participation in community life and engaging people in the environmental aspects of their neighborhood. Homeownership also lowers the need of local government to support senior citizens when their incomes decline (Habitat for Humanity Canada, 2003).

There are, however, disadvantages associated with homeownership compared to the rental tenure status. Homeownership requires occupants to exercise monetary discipline. Scheduled mortgage payments must be met, and upkeep chores must be respected. Renters are not bound by the same rules. They are free to move whenever their lease expires. In a recessionary cycle, the value of a home can be depreciated and losses can occur. On a community level, the drive for homeownership is often linked to urban sprawl, as land near urban centers becomes unaffordable to people with smaller means (Habitat for Humanity Canada, 2003).

There is also an apparent relationship between life stage and housing needs. Need for a home and the use of its space cannot, therefore, be regarded in a static, linear fashion. Transitions that result from accumulation of wealth and from the aging process affect acquisition and use of homes. Singles people are likely to look for modestly priced, smaller dwellings, preferably close to the town center or to learning institutions. They are likely to reside in a rented or owned apartment. Young couples with small incomes will also look for modestly priced accommodation. The desire to acquire their own place will increase when they consider expanding, or when they have just expanded, their family. They will look for an affordable, ground-oriented, and larger dwelling that is sufficient to accommodate a growing family; as the children grow, buying a larger home will be considered. The quest for privacy by adolescents will also foster a change in the dwelling's interior (Canada Mortgage and Housing Corporation, 1981).

When the children move out to form their own households, the parents will once again consider their own housing options. They may decide to remain in the same dwelling and adapt it to their physical limits or move to a new place. It is this dynamic process that largely affects affordability in each life stage as well. Means are likely to be more constrained in the beginning and the later phases of a household life cycle.

MEASURING AFFORDABILITY

The economic concerns of a would-be homebuyer are considered when housing affordability is calculated. The underlying principle of such a process is that buyers should not oblige themselves beyond their ability to live up to their financial commitment. Since most home buying in North America is done with funds loaned by private lenders, the rules or conditions of such loans are set by them. They are likely to request that two principles be respected. The first principle is that a homebuyer pay to the home's seller 25 percent of the value of the property upon purchase. This amount, known as a *down payment,* can be reduced as part of government assistance programs. In some instances, it can be as low as 5 or even 0 percent of the total dwelling's price. In such cases, the buyer will have to pay to the lender higher insurance premiums as a guarantee that the loan will be repaid.

The second principle relates to the monthly amounts that a buyer will have to pay to return the loan, which is known as a *mortgage.* The monthly mortgage payment should not exceed a limit set by a lender, which in most cases is 32 percent of the household's annual income and is referred to as the "gross debt service ratio" (GDSR). Once exceeded, overpayment to the home expenses portion of the family budget will have to come from other monetary allocations of the household priorities, which is clearly undesirable. Making sure that buyers will keep up with loan payments is, therefore, a priority of the lender.

In calculating the house expenses, the lender will commonly include the estimated monthly property taxes, utility costs, and the monthly mortgage payment. When the dwelling is sold as a condominium, 50 percent of the condominium fees will be taken into consideration as well. The size of the mortgage will be a function of the *mortgage payment factor,* which will depend on the length of time, known as the *amortization period,* through which the homebuy-

Figure 1.1 The relationship between income, down payment, and maximum affordable home price.

$$H = \frac{(A \times 32\% - C)}{E} \times 1000 + G \qquad C = \frac{H \times 1.9522}{12 \times 100} + H \times 0.1\% + J \times 50\%$$

Simplified, this gives

$$C = H \times 0.3\%$$

where

A is the gross monthly income
C is the estimated monthly property taxes, heating cost, and 50 percent of condominium fees, where applicable
E is the mortgage payment factor per $1,000 of loan
G is the down payment
H is the maximum house price
J is the condominium fees

er wishes to repay the mortgage. Repaying the mortgage faster will require larger monthly amounts, whereas stretching the payments over a longer period of time will place a lighter burden on the family. The relationship between the household income, down payment, and the maximum affordable home price is best represented in Figure 1.1. These figures and methods are instrumental in figuring out how much dwelling in terms of cost a homebuyer will be able to afford.

As outlined above, *affordability* involves a relationship between housing cost, which includes mortgage payments, rent, property taxes, and utilities, and household income. In particular, it refers to the ability of homeowners or potential homeowners to make payments on a home. *Access* refers to the ability of potential homeowners to obtain financing for a home. It is largely determined by lending practices set by the lender's conventions and affected by the availability of financing interest rates, down payment requirements, and other borrowing terms and conditions. The *affordability gap* is aonther important term that is commonly used in this context. It is defined as the difference between the amount a household can afford to pay as a percentage of income and the actual rent or mortgage payment needed, which is also set at 32 percent.

WHO BUILDS WHAT?

Affordable housing can be initiated and managed in a variety of forms. In this book, the term *affordable* is related to the share of income that a household will spend on acquiring, renting, and maintaining a home. Affordable housing is, therefore, seen here to be any kind of housing that meets an income target regardless of its occupants, its initiators, their source of funding, or whether the project, its managers, or its occupants received any kind of direct or indirect financial assistance.

The Initiating Party

Affordable housing can be initiated by two main sectors: the *nonprofit* and the *for-profit*. The nonprofit sector can either be a government-run agency or a non-governmental organization. A government-run project will use public funds, and the end product will commonly be referred to as *public housing*. The project will be not only funded initially but also managed or financially supported through its life cycle by its initiators or their representatives. Criteria will be set, mostly based on economic indicators, for admitting occupants to the project who will likely pay monthly rental fees. The project can be an apartment building or low-rise, single-family houses.

Non-governmental organizations (NGOs) have no legal affiliation with any level of government. The organization can, however, benefit from a subsidy program put forward by a government agency. The NGO may organize itself in a variety of legal structures. It can be a cooperative, for example, whose members will be affiliated based on their ideological beliefs. They will be associated to gain from the economy of scale that a large number of members creates. NGOs can be part of the voluntary sector, such as Habitat for Humanity, whose members are unpaid volunteers, or act for their own self-interest, such as members of a cohousing group.

A for-profit initiator can be any private sector firm that sets to develop, build, sell, or rent housing. It can be a land development company that purchased, subdivided, and made land into lots for sale to builders or to be built upon by the development company itself. The for-profit sector may benefit from direct or indirect subsidies as well. In a period of economic recession, government may lower interest rates or award grants to first-time homebuyers. For-profit builders use private sources of funding to support their projects. They will either qualify for a bank loan or use their own in-house funds. The cost-reduction strategies that will be outlined in this chapter can be implemented and used by either the nonprofit or for-profit sectors.

COST-REDUCTION MEASURES

This book examines and outlines cost-reduction strategies for a single home or an entire community. It places planning, design, and technology as key instruments in making dwellings affordable. Design, however, is only one of a number of strategies employed in bringing the cost of housing down. It will be worthwhile to review some of them here.

Policy and Regulation

Controlling and modifying public policies and regulations is largely under governmental control. It is an effective tool in ensuring that proper conditions will be put in place to make affordable design more effective. It may include reducing the length of time necessary for the project's approval or modifying development standards. Increasing the project density, for example, may be the outcome of this action. Innovation will be encouraged by permitting dwelling forms that are otherwise prohibited. Allowing secondary suites in large homes or garden suites in the rear of existing or new dwellings for rental purposes or for housing a senior member of the family can be the outcome of changing policy and regulations. Changing zoning to allow mixed-use activities in the same property can help as well. With appropriate permits, a portion of the home can become a business that will generate additional income to support the cost of the entire structure.

Financing and Tenure

Making housing accessible and affordable also can be achieved by creating appropriate financial mechanisms and tenure arrangements. Many federal, state, and municipal authorities have put such programs in place. They include the use of a *Housing Trust Fund,* the development of *Community Land Trusts,* the introduction of a land-lease tenure, or even making public land available at a reduced cost. In some locations, the use of the occupants' own labor, known as *sweat equity,* to build their home is encouraged and supported. Using Equity Co-operative would be an avenue, as well as forming partnerships between public, nonprofit, and private for-profit organizations.

Redevelopment and Renovation

Although this book deals primarily with the construction of new dwellings, affordable housing can be produced by using existing housing stock. A number of programs and strategies exist to take advantage of housing already constructed. The acquisition, renovation, and sale of dwellings is such a strategy. The projects can be initiated by either for-profit or nonprofit groups. The cost will be lower since the first initiator has already paid all or part of the mortgage.

Converting nonresidential buildings to housing also falls under this category. Known as a "brownfield development," these projects take advantage of inexpensive land or buildings, which are likely to be formerly industrial or institutional, for redevelopment as affordable housing sites. Situated in densely populated areas, these conversions offer a cost-saving advantage since roads and utilities already exist next to or on the property. Increasing the density of an underutilized site is another approach that can bring the cost of housing down. A single-family project may become a multifamily one as the building interior is altered or additions are made to the structure. The project's initiators may undertake construction of new dwellings while renovating old ones and connect them to already-in-place utilities.

Operation and Management

Once occupied, a dwelling's operation and upkeep expenses can be indirectly accounted for as part of its cost. Reducing these later expenses is, therefore, considered essential for owners of affordable housing. Selecting good construction products and techniques and instituting a regular maintenance program can assist in this regard. Choosing an efficient heating and cooling system, orienting the home for maximum passive solar gain, and making sure that it is well constructed and insulated will help reduce energy consumption and the monetary burden once the home has been occupied.

Reducing Cost versus Adding Value

When affordable homes and developments are designed, the strategies used in their conception can be divided into two: those that immediately contribute to lower cost and those that add value to the project by ameliorating its quality or appearance. The first, cost reduction, is a straightforward and quantifiable approach. The initiative needs to make the project, or part of it, less expensive compared to a similar design or product. The second, adding value, is less obvious since the outcome is not always measurable. The added value can be manifested by improving the curb appeal of the development or by increasing the occupants' pride and satisfaction. Adding value is important in the case of affordable communities. Past experience demonstrates that projects can be successful in reaching a cost target but poorly regarded by their occupants and neighbors. Affordable design may require reduction of cost but not necessarily lowering the quality and standards of the project. In advocating design strategies, the author will dwell on and advocate ideas that contribute to cost reduction and value amelioration.

Tenure and Legal Title

The tenure of a residence and its type of ownership title will depend on the nature of the project and the initiating organization. The project may be offered as an affordable rental accommodation or sold to individuals. When the project is initiated by a for-profit corporation, the units can be either sold or rented. Depending on the type of project, the legal title can be a *freehold,* whereby the occupants own both the land and structure. Public areas, such as the parks and the roads, will be owned and maintained by the municipality.

The legal title can also be a *condominium.* The occupants own their single-family home or flat, in the case of an apartment building, and the site occupant-owners collectively own the common spaces, such as the stairs, roof, roads, or yard. Condominiums are effective tools for lowering cost, since the cost and the maintenance of the common amenities are shared among many. When a public project is initiated by a government, it will remain government owned. The project can also be owned by an association of occupants, such as in a *cooperative* or *cohousing.* Decisions about project construction and later management are made by the association's members.

THE COST OF A HOUSE

Builders often divide the cost of residential developments into two categories: *hard costs* and *soft costs.* Hard costs are the sums of money that are spent acquiring the site and building the dwellings. Soft costs are the amounts spent on indirect expenses related to the execution and the marketing of the project, which are as essential (Figure 1.2).

Hard Costs

Hard costs may include several components: land cost, development costs, material costs, labor costs, and landscaping costs.

Figure 1.2 Development-cost breakdown of single-family and multifamily housing.

Components	Single-Family Housing	Multifamily Housing
Land	22	6
Materials	31	} 73
Labor	22	
Financing	5	12
Overhead and Profit	20	9
	100%	100%

Land cost refers to the amount spent acquiring land, whether undeveloped or partially developed. The project may be an entirely new development on the edge of town or a project built in an existing community. The cost of land will depend, among other factors, on the site's location, the utilities available, and the designated zoning.

Development costs are the expenses associated with the preparation of undeveloped land or an infill site for construction. This includes the clearing of natural obstacles (such as boulders), the laying of roads, and constructing the necessary utilities. Utilities, which will also be referred to in this book as infrastructure, include hydroelectric power lines, gas lines, water pipes, domestic and storm sewer lines, fire hydrant systems, cable and other lines for TV, telephone, and the Internet. The utilities are essential to the functioning of the community and its houses. They are provided and paid for by the project's initiator, whether it is a public agency or a private firm, and are included in the dwelling cost.

Material costs are the amounts spent acquiring the building materials necessary for the project's construction. Cost of materials may fluctuate with supply-and-demand cycles and the quantity needed. Some builders include rented equipment in this category.

Labor costs are amounts spent on the labor involved in constructing the dwelling and the community. They encompass salaries paid to the trades involved in all aspects of fabrication and include the rough structure, utilities, and finishings, both indoors and outdoors.

Landscaping costs will be spent on landscaping a single house or an entire development. Grading terrain for appropriate drainage, planting trees, and laying sod on the development's public and private areas are included in this category. Often developers may include landscaping costs in their land-development cost.

Soft Costs

Soft costs expended in the construction of a single home or an entire development may include the following components:

The *financing* is the amount that a homeowner, developer, or builder will spend borrowing money from a lender—such as a bank, trust, or credit union—to build the project. It will be paid back over time, according to the terms set by the lender. The borrowed amount, the *mortgage,* is made of capital—the amount lent and the interest costs. Often the lender will open for a builder a *line of credit* from which money can be withdrawn as construction progresses. The amount paid to the lender for its services and interest charged are referred to as financing. It may also be known as the "cost of money."

Professional fees are the monies paid to those who consult the project's initiator throughout the building process. They include land surveyors, who subdivide the site; the project's engineering, planning, and architectural teams; the legal consultants, who prepare contractual documents with the trades or when ownership is transferred to the eventual dwelling owner; and the accountant, who keeps the financial records of the project.

Marketing costs are the monies spent on promoting the project. In the case of a large development, advertisements have to be placed in local papers, project signs mounted, and pamphlets describing the dwelling layout and technical specifications printed. In some locations, this category may also include the cost of building, decorating, and maintaining a model unit—a showcase of sorts—that often doubles as the builder's office during the project's duration. Marketing costs may also include the set commission paid to a real estate agent for the sale of each home.

Taxes are the sums of money that the builder or the homebuyer will have to pay to federal or local tax authorities, and they should be considered part of the cost of the house.

Overhead refers to expenses incurred by the builder throughout the project life cycle. The cost of running the builder's own office, as well as the salaries paid to off-site staff, such as a secretary or bookkeeper, and on-site members of the team who supervise construction are also among overhead expenses.

Profit refers to the builder's own financial gain, which, depending on the type and size of project, may be considerable or limited. Any profit gained may fluctuate along with market supply-and-demand cycles. Traditionally, in residential projects, the profit may be as low as 5 percent and as high as 20 percent.

When financial issues related to affordable housing are considered, the tendency on the part of lenders and homeowners is to examine costs associated with homeownership in the *postoccupancy* stage as well. These costs add to the challenge of owning a home; they can include *condominium fees* as well as yearly municipal taxes. The cost of heating and cooling a residence, which are also referred to as *upkeep costs,* need to be considered as well as any ongoing repair and maintenance expenses. Once the purchase of a home is made, new homeowners will incur additional costs such as *legal fees* associated with the transfer of ownership from the builder, as well as moving, basic furnishing, and decorating expenses.

The categories and components listed above can be divided into two main groups as far as cost reduction measures are concerned. The first group includes those costs over which the project initiator, whether an independent homeowner or a builder, have no control. They include applicable taxes or interest rates, for example, that are set and regulated by governments. Other cost groups will be within the initiator's control and are subject to the project initiator's decisions. Selection of project site, nature and type of amenities as well as dwelling sizes, for example, are all subject to choices made by the property owner. Strategies to reduce these latter costs will be the subject of this book.

When construction costs for a new project are estimated, the type of structure and its methods of construction will be considered. The construction of a low-rise, wood-frame home involves different trades, construction methods, and materials than building a concrete or steel structure. The project will have a different life cycle and duration, which will affect the final cost. The cost will also depend on the project's geographic location and market cycle. Construction in urban sites is often considered costly due to the logistics involved in getting equipment and material into densely populated areas. Similarly, when the market is very active and trades and materials are in great demand, it will affect the cost and labor and materials may come at a premium.

PARTICIPANTS IN THE DELIVERY OF AFFORDABLE HOUSING

The building of a single home or an entire development is a complex and involved task. A number of organizations, agencies, and firms take part directly or indirectly in the process throughout the project's life, which is also known as the *delivery process*. Project participants have their own objectives, interests, and ways of working. These differences are likely to affect attempts to reduce a dwelling's cost. Participants in a housing delivery process can be divided into

Figure 1.3 The participants in the housing-delivery process can be divided into three broad groups.

1. Controlling Agencies	
A. Government:	
i. Federal and State:	Promotes and regulates housing policies and safety through financial incentives, codes, and standards.
ii. Municipal:	Using local legislation, municipal governments reflect their housing policies through a master plan and bylaws, as well as, when needed, a system of incentives.
B. Financial Institution:	Banks, trust companies, or credit unions that lend to the initiator or the home buyer the financial means for the execution or the purchase of a dwelling.
2. Participants in the Supply Process	
A. Initiator:	The party that initiates, conceptualizes, and realizes a project. The initiator can be a single person who plans to build a dwelling for himself, a private firm, or public entity, depending on the source of finance and objectives. Initiators can actually be involved in the building process or can designate a representative, such as a project manager, who will act on their behalf.
B. Design Consultant:	The project's designers, which include an architect, engineer, or interior designer.
C. Project Executor:	The actual party that executes and builds the design according to plans prepared by the design consultants. May be referred to as general contractor, subcontractor, or trade.
D. Product Manufacturers:	The manufacturer and suppliers of the materials needed for the project's construction.
3. Participants in the Demand Process	
A. User:	The party who uses the end product. It can be an individual homebuyer or a group of users in the case of cooperative housing.

three broad groups with specific roles and characteristics (see Figure 1.3). The following sections describe the characteristics of these parties, their role in the project, and their likely effect on the project cost.

Governments

In most countries a government's key political obligation is to ensure that all its citizens are adequately housed. It is often the shared responsibility of all levels of government, each of which contributes to this endeavor in a variety of ways. Governments can also act as developers through the building of publicly funded housing that, once built, is managed by a public agency throughout the project's life.

In North America, governments have traditionally played a modest role in homebuilding. The same is true of government contributions to the supply of affordable housing. Some 95 percent of all homes are constructed by private-sector builders with private funding. Providing incentives through a granting mechanism is the key role that governments commonly play in the construction of privately funded affordable housing.

The tendency of governments in North America in recent decades was to limit their role as residential builders and managers. This tendency often resulted in a lack of affordable housing, primarily for first-time homebuyers. Increased demand for higher-end homes did not make the building of lower-cost residences a worthwhile endeavor for for-profit builders; this lack of interest, on many occasions, led to a housing crisis.

All levels of governments, both directly and indirectly, are involved in the housing process as regulators. By setting building codes, standards, and zoning bylaws, governments exercise control over the end product. The codes decree a set of minimum dimensions and technical specifications to ensure the quality and safety of homes. Zoning bylaws can also help to generate affordable housing. By increasing density limits, for example, more units may share land and infrastructure expenses that can potentially lower the cost of an individual unit.

The secondary role of governments in affordable housing is, at times, stirring interest and educating the parties involved. Conferences and publications that instruct professionals and the general public are often the key means of communication and dissemination of knowledge about a subject.

Financial Institutions

Financial institutions play a critical role in homebuilding through their effect on both the builder's and the homebuyer's decisions. The majority of projects built and homes purchased are financed by private lenders. The guiding principle of the banking industry is to reduce the risks associated with the loan. As a result, careful scrutiny is made of every project and borrower to gauge the amount of risk involved. New design concepts and untried building materials will often be discouraged or not financed. Privately financed affordable housing may be considered "risky" by lenders. The low income of potential homebuyers may turn them into less than prime candidates for lending. It is therefore common for governments to assist first-time buyers by providing additional guarantees to their mortgage.

The Initiator

The term *initiator* refers to the individual or organization that initiates the housing project. It can be a government agency, an association of people who are about to construct cohousing or to reside under cooperative arrangement, or a for-profit private corporation. The terms that are commonly mentioned when a private housing development is constructed is *developer* and *builder.* Developer means *land developer,* which is the individual or entity that options and purchases the land and carries out the necessary administrative procedures, such as subdividing the land, obtaining the necessary zoning, and laying the infrastructure.

Once the site is subdivided and serviced by the developer, lots are sold to builders who then engage a design team, obtain building permits, and construct and sell the homes. In small projects, land development and construction may be done by the same organization. Traditionally, the for-profit building sector was composed of small organizations that built fewer than 20 dwellings per year. Today, there are several building firms that construct over 10,000 units a year in several states and sites.

A fundamental change occurred in the structure of home building firms after World War II. From a firm that executed all stages of construction with in-house labor, now the head of a building firm assumes a marginal role in active construction. Currently, most—if not all—work is subcontracted to tradespeople who are highly specialized in their fields of expertise and execute only a segment of the work. A rough carpentry team, for example, will not undertake finish carpentry work.

Nonprofit organizations—whether quasi-governmental or nongovernmental organizations—that initiate affordable housing begin the delivery process after their funding has been secured. The entire project may be built at once. For-profit builders, on the other hand, follow a speculative process. A model home will be constructed and additional units built as they are sold.

It is common in the private sector to encounter specialization. A builder will have expertise in projects of a certain size or building type with a defined price range. It is rare to see a small building firm that builds low-cost housing switch to high-end, more expensive homes. Building affordable housing is often regarded by for-profit builders as an undertaking that yields smaller gains compared to expensive homes. However, builders who build lower cost housing often enjoy the profit that results from a large number of units built. They also may be known as *volume builders.*

The Design Firm

The planning, architectural, or engineering firms provide the developer or the builder with knowledge about new trends and building technology in addition to consulting services. Yet, at times, design firms are reluctant to work with the for-profit housing sector due to the small budget that is allocated to design. Compromising professional ethics and liability is also a concern, because at times supervision may not form part of the contractual agreement and designs may be changed without notifying designers. Whereas small building firms will employ a “house designer” or use pattern-book designs, large development firms will engage the services of an urban planning or architectural consultant. Design consultants will help interpret zoning and density allowances in a way that permits introduction of change to conventional practice.

Architectural competitions are also an important instrument in bringing about change and new ideas. The years following World War II were such a period. Innovation was put to work to meet the constraints of small budgets and limited spaces. Once published, ideas generated during competitions inspired design concepts that were imitated across the continent.

In 1944, the Veteran's Administration created the Veteran's Mortgage Guarantee Program, later known as the *G.I. Bill of Rights*. Administered by the Federal Housing Authority (FHA), this program enabled veterans to borrow the entire appraised value of an approved house without a down payment. The importance of the G.I. Bill of Rights to the housing industry was in the guidelines set forth for qualified housing. The program limited the price range of the affordable postwar family house from $6,000 (C$7,800) and $8,000 (C$10,500) and the size range from 800 to 1,100 square feet (74 to 102 square meters). The price restriction drove architects into experimenting with cost-reduction strategies (Friedman, 1995).

Economic constraints, material shortages, technological advances, and changes in consumer expectations were reflected in the design of a typical, low-cost family home between 1945 and 1959. The prewar family home was commonly a two-story structure with a pitched roof and a basement. Such a structure was not acceptable under the FHA guidelines, because it was excessive in both size and cost. Therefore, postwar houses, though still traditional in nature, were considerably smaller, yet included more innovative features than their predecessors. Many of these innovations were introduced by the leading design firms of the day.

Interest in technology and modern concepts could be discerned in the West Coast's influence on housing design. Western ranch houses were characterized by their single-story, basementless, and flat-roof configuration. Such designs developed because they were climatically suited to California, but evolution in heating and cooling technology also made it possible to transfer these trendsetting designs to other climates. The popularity of the ranch home grew throughout this period, as the design developed such features as pitched eaves, large expanses of glass, a low profile, and a rambling floor plan. Architectural historian Gwendolyn Wright points to a primary influence on these ranch homes: "These relaxed, comfortably styled homes may be seen as a modification of Frank Lloyd Wright's Usonian House concepts with the addition of traditional elements: clapboard, shutters and a front porch" (Wright, 1981).

Product Manufacturers

Manufacturers and suppliers form a vital part of the building process. For the most part, they are the only particpants in the homebuilding industry with sizable investments in facilities and production equipment. But their greater, more important role has been in the development and the promotion of new products that contribute significantly to cost reduction.

One of the well-known products that revolutionized homebuilding is the prefabricated roof trusses, which forever changed the way roofs on wood-frame buildings were constructed. The development of gypsum wallboard altered the way interior walls are finished by eliminating the need for cumbersome plastering, saving labor costs, and shortening construction time. Another notable example of significant cost savings for labor and materials was a result of the invention of the plywood board. It altered the way roofs and exterior walls, as well as interior subfloors, were constructed by enabling coverage of large surfaces at a fraction of the cost and time.

Construction costs can, therefore, be reduced by employing new techniques or materials. Products, tools, and new technologies, however, are continuously invented. Some inventions hold promise, but they require time to be accepted by mainstream builders before they will generate the economy of scale that contributes to significant savings. However, caution has to be exercised, as past experience shows that a "miracle product" has sometimes resulted in failures that necessitated replacement or additional expenses.

The User

Users of affordable housing may live in a publicly funded project or buy a market home. Yet their ultimate concerns may be identical to other homeowners— to reside in an adequate and safe home. The user's identity and needs may or may not be known to the project's initiator at the time of design and construction. In a custom-designed project, knowing the user's budget and personal tastes will help guide design decisions. In a subsidized project or a privately initiated, multiunit dwelling project, where the occupants are unknown, design decisions will have to be based on assumptions and perhaps fit to the owner's needs during or after construction.

For a homebuyer, the purchase of an affordable home will typically involve the greatest single outlay of a household's financial resources. Home purchase, however, includes more than an economic dimension. The home and its location, more than any other factors, play a major role in determining the day-to-day quality of life experienced by a household. The homebuying process itself is a complex one, especially for people with limited means and more restricted choices. Several factors are involved in such a process. They include the physical characteristics of the dwelling, the location, and the corresponding social connotations; the physical features of the home, such as size and architectural style; and the characteristics of the household itself, such as life-cycle stage, number of family members, and wealth. These factors will combine to influence the home's purchase and use. Once purchased and moved into, the home is likely to affect many household decisions, at least in the period following occupancy. It may require the purchase of another car and additional expenses, such as maintenance and upkeep, that were not part of the homeowner's budget before.

THE BUILDING PROCESS

The participants in the housing delivery process can be perceived as a team formed on a short-term basis around a project. This team is established to manage, design, and construct a project on a specific building site. Despite the fact that the team's members are independent, decisions made by each participant affect the entire team. The relationships among the participants usually take the form of contracts, the prime objective of which is to outline what the contributing parties are to deliver and to receive. However, these contracts do not establish the functional division of responsibilities among the parties. In a large housing project, three major contracts are commonly signed. They can be seen as lines of communication between the user and the initiator, the lending institution and the initiator, and the initiator and the project's subcontractor.

Analysis of the housing delivery process as a system demonstrates that a very efficient way of building homes has been established in North America. Millions of units have been built since the mid-1940s, and approximately two million new units are added each year. The system as a whole performs a routine sequence of tasks, which explains its efficiency. Many of the units built are consistent: similar plans, layouts, construction methods, and finishing standards. Roberts (1970) sees the decision-making process that takes place prior to the building of a home as a "closed system" (Figure 1.4). In the for-profit sector, once a builder decides to build, construction starts are rapidly followed by completion and occupancy. Each unit sold generates profits, which then generate capital for the initiation of a new project. The efficiency of the housing delivery process can be demonstrated by examining the communications that take place after the decision to build has been made. Working drawings are simplified, because the trades are familiar with traditional construction techniques; specification of products are brief and need few details, because manufacturers know how their products will be used and design them to fit conventional construction.

Innovation and fundamental change of the above processes are difficult to introduce since they tend to break down a routine process in which the parties are familiar with the tasks they are to perform. The introduction of lower-cost design strategies in a manner that will alter mainstream process will not be welcome and will probably fail. Innovation should be compatible with current industry customs rather than to try to introduce new ones. Innovators need to

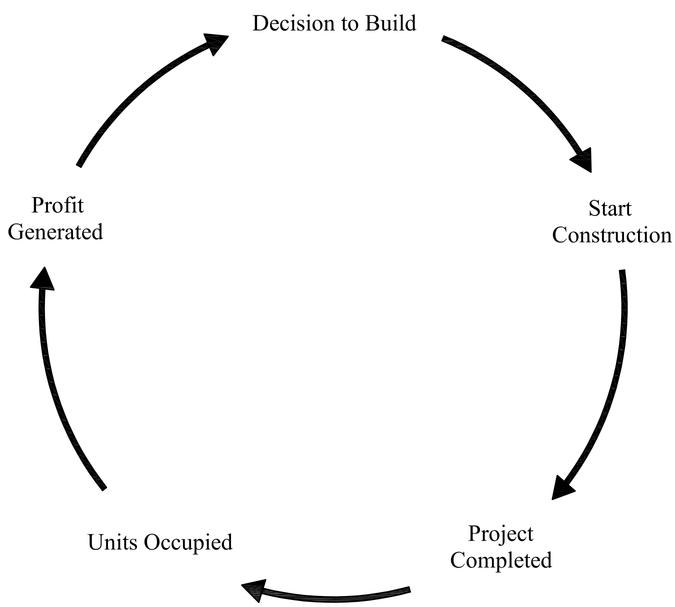

Figure 1.4 The mass housing development process can be regarded as a "closed system," where successes in one project lead to the initiation of the next.

consider the fact that most building firms are small; however, builders will support innovative ideas that are likely to help them either increase profits or save time.

The concepts and terms described in this chapter serve as background for this book. Some of these concepts and terms will be referred to as the various cost-reduction strategies are discussed in the following chapters. Although planning and architecture are the main thrust of this book, one needs to bear in mind that other ways to lower costs must also be explored.

KEY CONSIDERATIONS

- An expenditure of 32 percent of a household's gross annual income on mortgage principal, interest, taxes, and utilities has become a recognized measure of how much people should spend on rented or owned adequate and safe housing.
- The share of small families composed of single persons or single-parent families grew in the past half-century. The households with a single breadwinner had difficulty acquiring the means to purchase a home.
- Homes constructed today have grown significantly in size compared to earlier decades. These homes have also improved in quality and contain more costly finishes, systems, and utilities, making them more expensive.
- New economic realities contributed to the disappearance of job security, which is critical for those who wish to qualify for and obtain a mortgage.
- Fearing the possibility that lower-cost housing might be constructed in their municipality, some cities initiated bylaws that made building affordable homes impossible, fostering "not in my backyard" (NIMBY) sentiments.
- Homeownership is known to benefit the community at large increasing an individual's participation in community life. It also reduces the need of local governments to support senior citizens when their income declines.
- The affordability gap is the difference between the amount a household can afford to pay as a percentage of its income and the actual rent or mortgage payment needed.
- In addition to design and construction, cost reduction in housing can be achieved by altering policy and regulations, creating avenues for innovative financing and tenure, initiating redevelopment and renovation, and ameliorating the project's operation and management.
- Selection of appropriate housing design strategies can contribute to lowering cost or to adding value, which will increase the occupant's pride and satisfaction.
- The key components that determine the cost of a house are land, infrastructure, material, labor, landscaping, financing, professional fees, marketing, taxes, overhead, and profit. Whereas this book will dwell on lowering development and construction costs, known as hard costs, other items, known as soft costs, need to be considered as well.

- The cost of a home is likely to be affected by actions taken by a range of participants in its delivery process. They include governments, financial institutions, initiators, design firms, product manufacturers, and the end user, that is, the buyer or renter.
- The participants in the housing delivery process can be perceived as a team formed on a short-term basis around a project. Despite the fact that the team's members are independent, decisions made by each participant affect the entire team.