

Integrated Land Use and Transportation Policies: What Can Reykjavík, Iceland and Other Cities Learn from Portland, Oregon?



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Abbreviations and Acronyms

CCTMP	Central City Transportation Plan
DPCP	Downtown Parking and Circulation Policy
FTA	Federal Transit Administration
LCDC	Land Conservation and Development Commission
Metro	Metropolitan Service District
MSA	Metropolitan Statistical Area
RTP	Regional Transportation Plan
SOV	Single-Occupancy Vehicle
SSH	Association of Municipalities in the Capital Area
TOD	Transit-Oriented Development
TPR	Transportation Planning Rule
TriMet	Tri-County Metropolitan Transit District
TSP	Transportation System Plan
UGB	Urban Growth Boundary
VMT	Vehicle-Miles Traveled

Abstract

This paper discusses integrated land use and transportation planning policies in Portland, Oregon and the lessons learned in the city's fight against sprawl and extensive automobile-use. In particular, it focuses on how Portland's experience with such policies can be of use to other cities which are dealing with sprawl and extensive automobile-use, particularly Reykjavík, Iceland. Portland is very famous for progressive planning and there is a wealth of information in the literature about its experience. The city is often mentioned in relation to planning initiatives such as urban growth management, smart growth, transit-oriented development (TOD), New Urbanism, and integrated land use and transportation planning to name a few. Integrated land use and transportation planning aims at mitigating problems stemming from automobile use and creating a compact and liveable city environment with land use solutions. Like most North-American cities, Reykjavík was mostly developed after the arrival of the automobile and is considered sprawled compared to most other European cities. Therefore it could learn from cities such as Portland which has dealt with similar problems as Reykjavík in an innovative and strategic way for close to four decades.

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1. Introduction

Few will debate that there are various problems related to the extensive automobile use in many North-American and European cities and that costs of sprawl are widespread and numerous.

Problems stemming from sprawl and heavy automobile-reliance include traffic congestion, long commutes, loss of natural resource land, inner city deterioration, rising cost of public services and pollution (Easley, 1992). Statistics show that Americans are spending increasingly more time behind the wheel and less time walking and cycling resulting in various health implications and environmental pollution. Census data indicates that sprawl has been increasing in North-American cities in the last decades and that developed land area and vehicle use has increased much faster than population growth, for example, the population of Chicago grew by only 4% between 1970 and 1990, while the urbanized area grew by 46% (U.S. Census; see also Abbott, 2001). However, sprawl is a complex phenomenon, which is not only measured by density.

There have been many attempts at defining and measuring sprawl. Besides low-density development, sprawl is considered to include factors such as: separation of land uses; leapfrog development; strip retail development; automobile-dependent development; development at the periphery of an urban area at the expense of its core; employment decentralization; and loss of agriculture and open space (Lopez and Hynes, 2003).

The continuing growth of urban areas has put a lot of pressure on governments which are finding it increasingly difficult to provide sufficient infrastructure for new development. It is almost certain that congestion will only increase and experience has shown that providing more highway infrastructure only temporarily relieves traffic congestion (Downs, 2004). Planners have long sought to solve these problems, with limited success and our cities continue to spread out and eat up prime forest and farm land. Some North-American cities have made an effort to

mitigate sprawl and other problems related to extensive automobile-use, few as consistently as Portland, Oregon. Portland has used integrated land use and transportation policies for over three decades to fight sprawl and automobile reliance and create a compact and liveable city while minimizing negative effects on the natural environment. Thanks to its integrated land use and transportation policies, Portland often scores high on urban liveability rankings and lists of the nation's best managed cities (Abbott, 2001).

This paper discusses integrated land use and transportation planning policies in Portland and the lessons learned in the city's fight against sprawl and extensive automobile-use. In particular, it focuses on how Portland's experience with such policies can be of use to other cities that are dealing with sprawl and extensive automobile-use, particularly Reykjavík, Iceland. First, integrated land use and transportation planning is discussed in general, before looking specifically at the Portland experience and why the city is considered a good example of land use and transportation planning in the planning literature. After that there is a brief discussion about challenges related to sprawl and extensive automobile-use in Reykjavík. Similarities and differences between the two cities, which might affect urban form and travel behaviour, are also studied. Then urban growth management policies and current plans in the two cities are examined as well as measures and indicators to evaluate the performance of these policies. This is followed by a general discussion about the effects of integrated land use and transportation policies and accompanying strategies. Finally, several policy recommendations for Reykjavík will be made based on the Portland experience.

2. What is Integrated Land Use and Transportation Planning?

The transportation network plays the role of transporting people and goods between destinations, which are defined by the land use. Without destinations there would be no need for a transportation network and without a network, destinations would be much harder if not impossible to get to. Therefore, land use and transportation are fundamentally interrelated and need to be planned in coordination. Although planners have been aware of this relationship for a long time, integrated land use and transportation planning has recently become more common as a response to problems caused by sprawl and extensive automobile-use. Traditionally, land development has largely been determined by market forces, while the transportation system has been developed by the public sector. Furthermore, due to the network nature of the transportation system, it is developed on a large geographic scale and funded by the national or federal government, whereas land development, with its local impacts, is managed on a micro level with much less funding. Therefore, land use is often dependent on transportation goals, which are focused on immediate transportation objectives and not on land development (Moore et al., 2007).

In North-America, transportation engineers and land use planners have worked in their separate corners with minimal interaction (Kunstler, 1993). Transportation engineers are usually solely responsible for providing easy and secure traffic flow on streets, in other words, ensuring good mobility in the street network. Focusing on mobility often means that the destinations that the commuter is travelling to are ignored. On the other hand, planners who are both involved with land use and transportation planning are more interested in accessibility, that is, “focus on the ends (rather than the means) and on the traveller (rather than the transportation system)”

(Levinson and Krizek, 2008:198). It is just as important to move the destinations closer to the travelers as it is to improve the means to get there.

Integrated land use and transportation planning aims at mitigating problems stemming from automobile use and creating a compact and liveable city environment with land use solutions. This involves measures to prevent sprawl on the macro scale, such as growth boundaries, which aim to create a more compact urban form that helps support public-transit (Moore et al., 2007). The most famous growth boundary is probably London's Green Belt, which has generally been considered successful in conserving open space on the outskirts of the city. However, recently it has undergone more criticism because of shortage of housing and leapfrog development that jumps over the greenbelt and continues on the other side of it, thus increasing commuting distances (Amati and Yokohari, 2006). This might have happened because not enough building land was left inside the boundary and/or due to relaxed zoning regulations within the boundary.

Such growth management at the macro level should be accompanied with growth strategies at the micro level as well, to improve accessibility. For example by applying zoning regulations that allow for high density and mixed land use, with residential neighbourhoods in proximity to retail and services. This provides more destinations within a given radius of any trip's origin and makes it possible to use alternative modes of transportation, such as walking, cycling or high-frequency transit. A traditional grid street pattern, with frequent intersections that ensure better connectivity, is also assumed to encourage walking and cycling to a certain extent (Cervero, 2002). Some theorists maintain that urban design strategies, such as attractive human scale, pedestrian-friendly development patterns with high-quality public spaces, will encourage people to walk or cycle (Kenworthy, 2006). Another way of reducing travel distances and

potentially changing travel behaviour, according to the literature, is creating high-density employment and residential centers that are easily accessible for all modes of transport, particularly public-transit (Kenworthy, 2006).

This kind of development pattern is by no means a new idea. In 1898, Ebenezer Howard published his work on Garden Cities, which combined the qualities of country life on one hand, and town life on the other, with their compact urban core and surrounding agricultural greenbelt (Howard, 1965[1898]). Neighbourhoods with a pedestrian friendly environment, where people could run most of their errands on foot and commute to work by public-transit, existed in most American cities in the 1950s. According to Frank (2000), research indicates that non-motorized and transit-trips are more common in traditional neighbourhoods with a high density, mixed use and pedestrian friendly environment, than in more recent developments, although it is hard to determine which land use factors have the biggest impact on travel behaviour and which have little or no effect. Recently planners have tried to imitate the traditional neighbourhood design under various labels such as urban villages, new urbanist, neo-traditional and pedestrian or transit-oriented development (TOD) (Frank, 2000). However, researchers still debate about the efficiency of integrated land use and transportation policies in reducing automobile-use (Cervero, 2002; Kenworthy, 2006; Levinson and Krizek, 2008; More et al., 2007; and Pickrell, 1999). It is also important to keep in mind that the goal of most developments which include these components is often not limited to promoting alternative modes of transportation, but also to provide a compact and attractive urban environment.

Research suggests that, to be successful in reducing urban sprawl and automobile use, planning policies need to be comprehensive, include a large variety of strategies and be managed on a regional scale. Many of these strategies involve public intervention in private development

which is often unpopular and therefore need to be implemented incrementally to be able to achieve their goals. Therefore, it is important to involve the public and use the market to affect housing location choices and travel behaviour, for example through proper pricing of public infrastructure, but these costs are often borne by taxpayers in general and not only those who use it (Moore et al., 2007). The next chapters will discuss how integrated land use and transportation policies have been implemented in the City of Portland, Oregon, which has been considered an example of successful urban growth and land management.

3. What Makes Portland a Good Example of Planning?

Portland is more than a geographic area – it is a way of life. Many characteristics combine to provide the unique livability of the city: the physical setting of hills, trees and rivers, accented by snowcapped peaks on the horizon; a dynamic urban setting, enhanced by the intense yet human character of the Downtown; an active seaport a hundred miles from the ocean; thriving businesses and industries providing diversified employment; and a variety of neighborhoods, each unique in character, allowing for a broad range of lifestyles (City of Portland, 2006a:V-1).

The City of Portland is located in the Willamette Valley, 145 kilometres (90 miles) from the Pacific Ocean, in the north-western corner of Oregon. The Metropolitan Statistical Area (MSA) (also known as Greater Portland) includes six counties, five in Oregon (Clackamas, Multnomah, Washington, Yamhill and Columbia counties) and Clark and Skamania Counties in Washington State north of the Columbia River with a total population of 2,159,720 in 2007, of which 568,380 lived in the City of Portland (Portland State University, 2007). However, most of the urban area is in Clackamas, Multnomah, Washington and Clark Counties. Portlanders have benefited from the beautiful natural environment to establish a rich outdoor culture (Mayer and Provo, 2004). However, Portland is not only renowned for its beautiful surroundings, but also for its vibrant downtown and older neighbourhoods. The city has been developed incrementally and has managed to conserve built heritage from previous generations while accommodating economic and demographic change at the same time (Abbott, 2001).

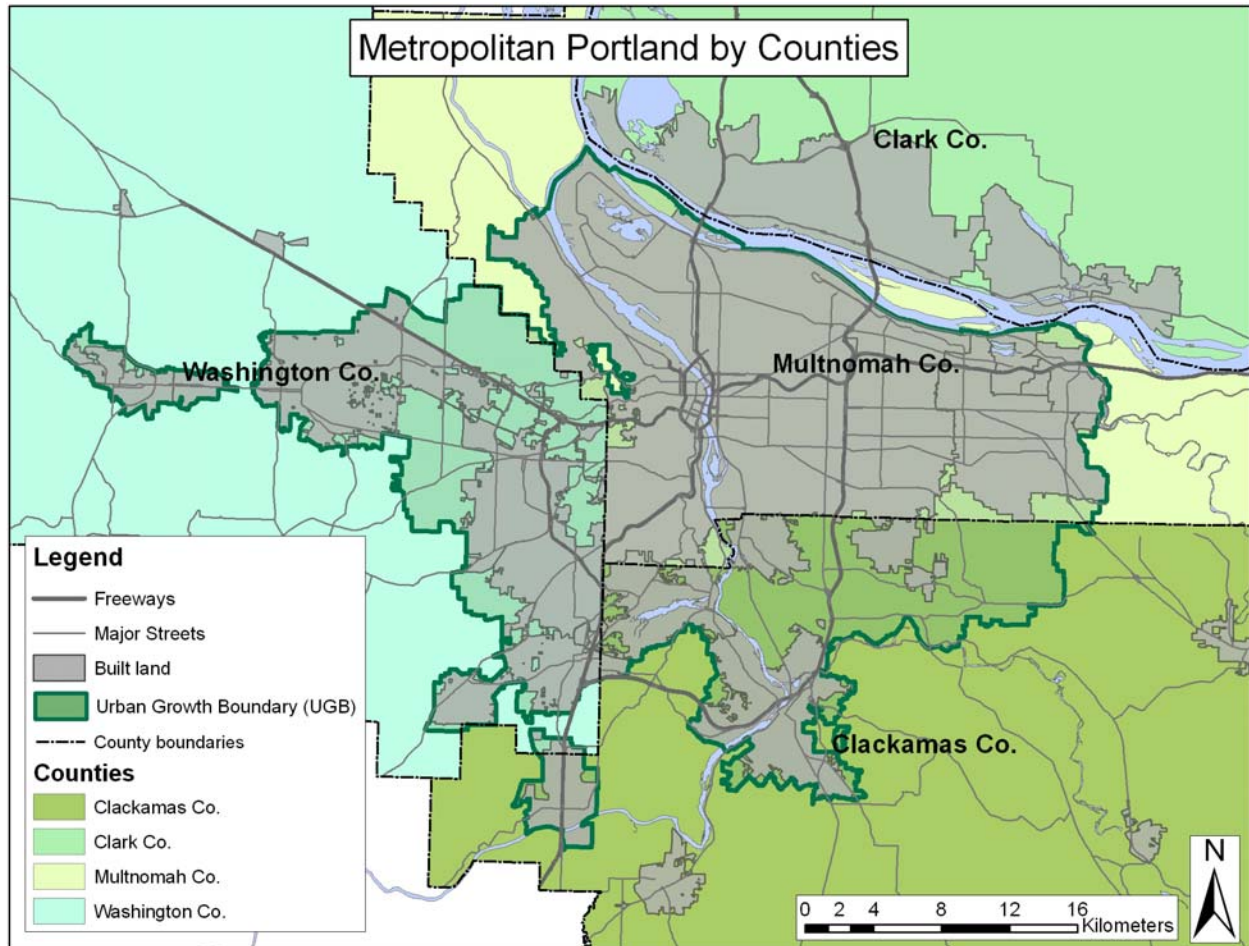


Figure 1: Map of Metropolitan Portland. Source: Author, adapted from U.S. Census data.

Just like most cities in the 1950s, Portland today has a strong central core, which is the focal point of the local economy, politics and culture. It has a sense of place provided by attractive public spaces, diverse shopping districts, coffeehouses and microbreweries (Abbott, 2001). As Kunstler (1993:201) put it in his heated censure of America’s sprawling suburbs: “[In Portland] the texture of life is mixed, complex, and dense, as a city ought to be, the way all cities used to be before the automobile and curse of Modernist planning.” The city has been successful in attracting many young professionals, which, along with the arrival of high technology firms has further strengthened the economy of the city (Mayer and Provo, 2004).



Figure 2: Public transportation and street life in downtown Portland. Source: Author.

In a 2001 interview with the Reason Policy Institute, the renowned social critic, Jane Jacobs, said that Portland was not a dense city and never had been, but at the same time she praised the city for the rehabilitation of old buildings, the quality of its public spaces and the efficiency of the transit service (Reason Policy Institute, 2001). Portland has been increasing density in the last decades (Abbott, 2001), although it is still not among the densest cities in North-America and certainly less dense than European cities. What is most important about the city's growth strategies is the focus on densification in specific locations which are easily accessible by public transportation. Portland has its fair share of suburban development with large subdivisions, malls and wide boulevards, which were mostly built in the 80s and 90s within the Urban Growth Boundary (UGB). However, because of the UGB and increasingly strict zoning regulations, this kind of development is contained, which means that large mega subdivisions that would threaten the liveability of the downtown area are restricted. Instead small subdivisions between suburban developments are being filled in by local developers. The central city, which is served by

efficient public-transit, is still the main service area and attracts people living and/or working in the suburbs (Marshall, 2000).

When Jane Jacobs was asked what she liked about Portland, the answer was: “People in Portland love Portland. That’s the most important thing” (Reason Policy Institute, 2001). One reason for Portland’s success in implementing progressive planning policies is its citizens. Planning has become like a local sport in Portland and ordinary citizens are often very involved in issues related to planning (Ozawa, 2004). A clear manifestation of this activism are the numerous so-called “Friends-of” community controlled neighbourhood associations, such as 1000 Friends of Oregon which has been very prominent in the urban growth management debate (Abbott, 2001). One of the most famous planners that worked in Oregon, Christopher Alexander, emphasized the importance of community participation in planning:

Only the people can guide the process of organic growth in a community. They know the most about their own needs, and they know most about how well or how badly the rooms and buildings, paths and open spaces are working. ...No matter how well architects and planners plan, or how carefully they design, they cannot by themselves create environments that have the variety and the order we are after. An organic mixture can only be made by the action of a community, in which everyone helps to shape the parts of the environment that he knows best (Alexander et al., 1975:38).

Portland is very famous for progressive planning and there is a wealth of information in the literature about its experience. The city is often mentioned in relation to planning initiatives such as urban growth management, smart growth, TOD, New Urbanism, and integrated land use and transportation planning to name a few. All these attributes make Portland different from most mid-sized American cities and an interesting example in terms of innovating planning.

4. Urban Planning Challenges in Reykjavík

The Reykjavík Capital Area in Iceland (from now on referred to as Reykjavík) consists of eight municipalities (Reykjavík, Kópavogur, Hafnarfjörður, Garðabær, Mosfellsbær, Seltjarnarnes, Álftanes and Kjósarhreppur) with a total population of 196,564 on January 1, 2008 (Statistics Iceland website, n.d.), which is almost two thirds of the total population of Iceland. Like Portland, Reykjavík has a beautiful natural environment and is surrounded by the North-Atlantic Ocean, mountains and lava fields. The city centre, which is the oldest part of the city, is characterized by a dense pattern of two to three storey houses on narrow streets. The old city centre is located on a small peninsula, but residential suburbs spread out on plentiful land beyond the peninsula. Like most North-American cities, Reykjavík was mostly developed after the arrival of the automobile and is considered sprawled compared to most other European cities. The city grew very fast during the 20th century. At the beginning of the century, the population of the Town of Reykjavík was only around 6,000, but reached more than 100,000 less than a century later (Committee for the Regional Plan, 2002).

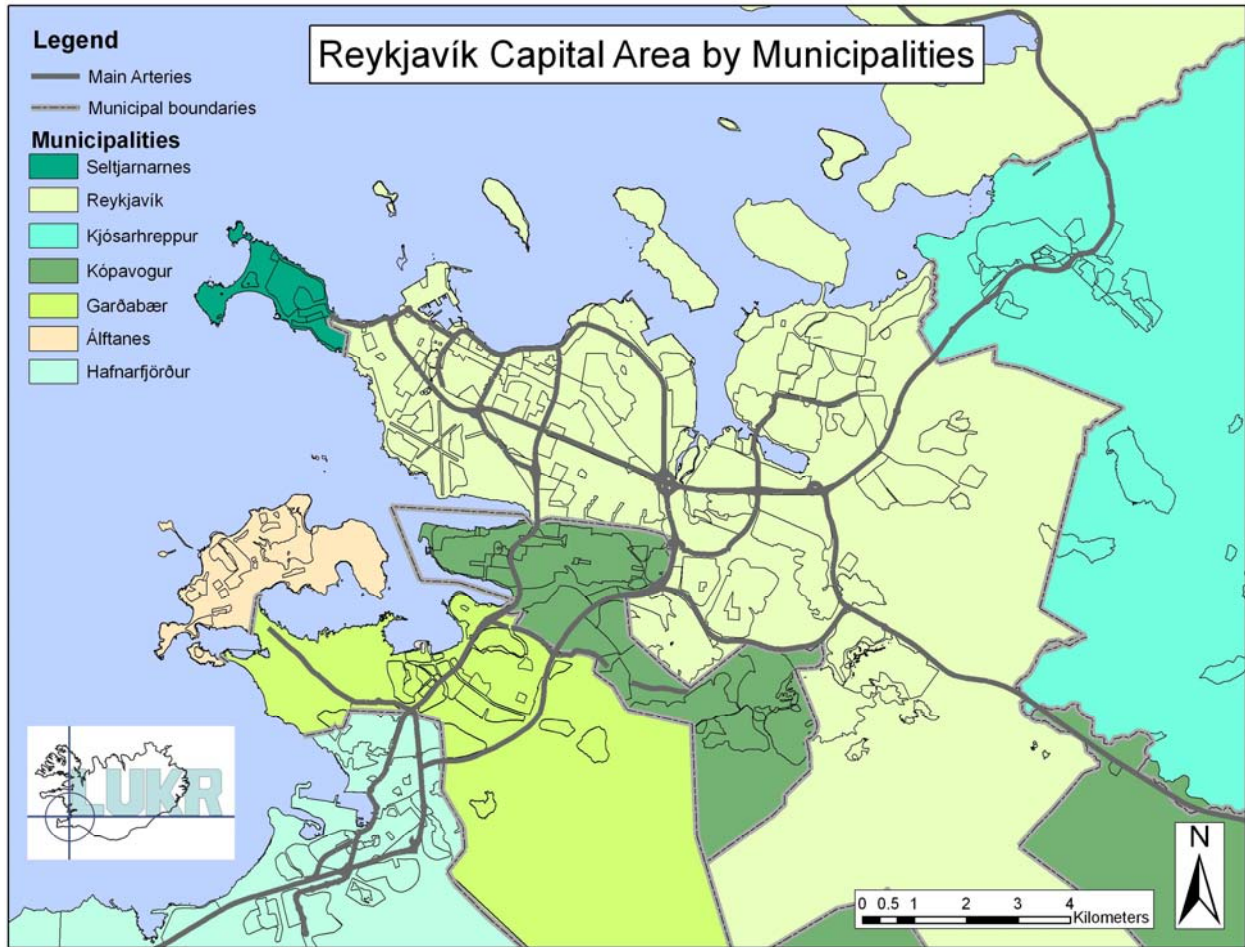


Figure 3: Map of Reykjavík Capital Area. Source: Author, adapted from LUKR (Reykjavík Land Information System) data.

Despite rapid growth in the last decades, Reykjavík still has a lot of available building land (Bragadóttir, 2005). The sparse population of local municipalities and the recent record car ownership and usage have caused several challenges in planning (Theodórsdóttir, 2004). Developers have been inclined to construct on undeveloped land since it has been easier and less expensive than doing infill development due to low infrastructure costs which are shared by all taxpayers (Óskarsdóttir, 2004). Like most Americans, Icelanders in general also seem to be more attracted to single-family housing with a large lot than higher density development (Jónsdóttir, 2004).

The City of Reykjavík has aimed at increasing density in the last two decades (Sigurðsson, 2003). The average density in the city is 33.5 inhabitants per hectare (13.6 per acre) and 28.8 inhabitants per hectare (11.7 per acre) in the Capital Area, which is more than in most North-American cities and less density than in European cities (City of Reykjavík, 2006). In comparison, the City of Portland had 15.2 inhabitants per hectare (6.1 per acre) in 2000 (Demographia website, n.d.). This is a very low number considering how much effort has been put into densification and reducing urban sprawl in Portland. In fact, it seems like Portland could learn more from Reykjavík than the other way around in terms of densification. However, Portland has been increasing density in the last decades, from 11.3 hectares (4.6 per acre) in 1980 (Demographia website, n.d.). It is also important to keep in mind that it is very difficult to measure and compare density between cities and regions, since it depends on what exactly is included in the measurements (City of Reykjavík, 2004). According to a report on transportation planning in Reykjavík, the average density in the Capital Area will probably stay the same until 2024. Further, increased density alone will probably have little effect on travel behaviour, particularly since different land uses are relatively separated in Reykjavík, which increases distances to retail and services (City of Reykjavík, 2006).

Even though numbers show that Reykjavík is quite dense compared to North-American cities, one does not get that impression when travelling between the city's neighbourhoods, which are divided by large highway infrastructure. There seems to be a tendency in the Capital Area to over-calculate traffic forecasts and the need for new transportation infrastructure and roads' right-of-way often seems over-estimated. This has resulted in large road infrastructure which allows for high speeds, creates barriers between neighbourhoods and alienates pedestrians and cyclists (City of Reykjavík, 2004). Early plans for the city, which assumed a new city centre

east of the old one, called for an extensive road network with high volumes of traffic. The road infrastructure was constructed well before the new centre (Kringlan shopping mall), which was a much smaller centre than the plans anticipated (Bollason, 2007). Surveys have demonstrated that the proportion of land use taken up by transportation infrastructure is around 48%, which is similar to many North-American cities where the private automobile is the dominant mode of transportation (City of Reykjavík, 2004).



Figure 4: A picture of large road infrastructure by Kringlan shopping mall. Source: City of Reykjavík, 2004.

During a visit to Reykjavík, Jens Rørbech (2005), former City Engineer of Copenhagen, Denmark, warned against short-term planning and the construction of unnecessary large highway infrastructure that deteriorates the urban environment. He emphasized that instead traffic flow could be reduced with other less costly measures, although he admitted that it would be challenging to reduce automobile-use in Reykjavík given the way the city has developed.

Traditionally, Reykjavík has mostly compared itself to Scandinavian cities and sought to them for examples of efficient planning initiatives. The city could certainly learn a lot from other European cities in terms of more sustainable planning to reduce sprawl and automobile use. However, in some ways Reykjavík is more similar to North-American cities than European ones. For example, like most U.S cities, it is a young city that was mostly built after the arrival of the automobile.

Reykjavík scores higher than Portland in terms of density. However, planning a sustainable city involves more than just high density. Cities can be relatively dense overall even though they are mostly composed of single family homes with large lots and are vastly car-oriented. For example, Los Angeles, which is notorious for sprawl and automobile dependence, is much denser than Portland, in fact, it is one of the densest large cities in the U.S. with a population of 28.7 per hectare (11.6 per acre) (Demographia website, n.d.). Galster et al. (2001) measured sprawl based on the lack of land use patterns such as density, continuity, concentration, clustering, centrality, nuclearity, mixed land uses, and proximity and found out that Portland ranks as one of the least sprawled cities in the U.S. (Galster et al. 2001). Therefore, it is very important to plan for growth in specific areas with good accessibility. Reykjavík has been very focused on increasing density without emphasizing other sustainable growth strategies such as mixed land use and development around transportation corridors and this is something the city could learn from Portland.

Portland is famous for its attractive neighbourhoods with mixed land use liveable public spaces, efficient public transportation and high-quality urban design. The city has aimed at creating a sustainable and attractive urban environment in an innovative and strategic way for close to four decades, with considerable success. Portland, with its progressive planning

initiatives, has caught the attention of planners all over North-America and elsewhere and is widely referred to in the planning literature. It has also been successful in attracting new residents which have boosted the economy (Oates, 2006; Abbott, 2001). Therefore, it is an interesting example that other cities could learn from. However, when adapting planning policies from one city to another, it is important to be aware of geographical and cultural differences, which will be addressed in the next chapter.

5. Similarities and Differences between Portland and Reykjavík

No two cities are the same and it is important to keep the differences in mind when adapting planning policies from one city to another. There are a lot of factors that affect the urban form and travel behaviour, for example, geography, landscape, climate, demography, socio-economic factors, history and culture. Reykjavík's young age, sprawled development and automobile-reliance make it more similar to U.S. cities than European ones although density numbers and use of alternative modes of transport is higher in Reykjavík than in most U.S. cities.

One advantage that Reykjavík has as the only metropolitan area in the country is that, unlike Portland, which is competing with other regional and west coast cities, the Reykjavík Capital Area does not have to compete with other metropolitan areas, at least not within the country of Iceland. This should make it even easier to implement rigorous growth management and integrated land use and transportation policies in Reykjavík, as the city does not need to compete with other areas for population and the government is therefore not as tempted to give into sprawling development pressure. However, there seems to be a hard competition between the municipalities in the Capital Area, which can make collaboration to mitigate negative effects of sprawl and automobile-use difficult. Similarly, Portland has had to compete with Clark County in Washington State, which is outside of the growth boundary and is therefore more accommodating to sprawl. Still, this has not stopped the region on the Oregon side from maintaining a stringent UGB.

Despite geographical differences, the landscapes around Portland and Reykjavík have some things in common; both cities have a picturesque natural environment, which many want to protect against urban expansion. Ethan Seltzer, director of the School of Urban Studies and Planning at Portland State University, described Portlanders' attitude towards the city's natural

environment: “This is not a city that stands back and looks at its skyline and says, ‘What a great city!’ It’s a city that stands back and says, ‘Look at those mountains!’” (Marshall, 2000:165). A similar view is common in Reykjavík with spectacular Mt. Esja to the north of the city. This kind of attitude has helped in gaining support for urban growth management in Portland and should have the same effect in Reykjavík.

Climate is often considered to have a major influence on travel behaviour. Contrary to what its name implies, the winters in Iceland are quite mild, particularly on the south-western corner where Reykjavík is located. The average temperature in the winter is around 0°C (32°F) and in the summer around 7.3°C (45.1°F) (Icelandic Meteorological Office website, n.d.). The average temperature in Portland is higher, 17°C (62.6°F) in the summer and 7.6°C (45.6°F) in the winter (National Weather Service Forecast Office website, n.d.). However, the temperature in Reykjavík barely goes under tolerable limits for people to walk or take public transit, although snow in the winter can make cycling difficult. Portland and the north-western corner of the U.S. have a notoriously rainy climate with an average precipitation of 78.5mm (3.1 inches) per month each year (National Weather Service Forecast Office website, n.d.), as does Reykjavík, with an average precipitation of 68.5mm (2.7 inches) per month each year (Icelandic Meteorological Office website, n.d.). Being an island in the North-Atlantic Ocean, Iceland, and particularly Reykjavík, which is located on a peninsula, is a windy place. The northern location of Iceland also means that the sun is low on the horizon. Both these factors have been used as arguments for low-rise development in Reykjavík, which makes sense, as tall buildings would cast long shadows and cause strong gusts of wind. At the same time, development should be dense to protect against the strong winds.

The biggest difference between the two cities is probably the population. The Reykjavík Capital Area had a total population of 196,564 on January 1, 2008, while Metropolitan Portland had a population of over two million in 2006. Smaller cities usually have shorter distances and should be easier to travel by cycle or foot, although it might be harder to maintain efficient public-transit with such a small customer base, particularly in a sprawled built environment. There appears to be a certain stigma around public-transit in many North-American cities, where lower-income groups and immigrants, who do not have access to a private automobile seem to use public-transit more than middle- or upper-income residents. In Iceland, there is not the same stigma around public-transit, although it is more widely used by lower-income people and students (Sigurðsson, 2004). This should make it easier to attract more people to public-transit by improving accessibility and services of transit in Reykjavík.

Portland has a very unique political culture compared to other U.S. cities. The city's Metropolitan Planning Organization (Metro) was the first regional government in the country with an elected executive and a council elected by districts. The city also has very active neighbourhood associations and citizen involvement in planning and politics in general. The American journalist Robert Kaplan compares the political environment in Portland to that of a Scandinavian country "where almost everyone shares a background and values, and trusts the centralizing and controlling force of local government to preserve these things" (Kaplan cited in Abbott, 2001:204). Abbott notes that Portland has a "political culture that treats land use planning, with its restrictions on private actions, as a legitimate expression of the community interest" (Abbott, 2001:6). This kind of mindset is unusual in North-America, where private property often has prominence over public interest, and has been important for the sustenance of the UGB. It is hard to determine whether stringent land use regulations including a UGB in

Reykjavík would receive as much support for the same reasons. Even though tolerance for government involvement seems to be higher in Iceland than in the U.S., property rights are also very strong in Iceland, probably stronger than in other Scandinavian countries. However, a lot of the building land around Reykjavík belongs to the city, which makes it easier for the government to regulate land use. Thus, there seem to be sufficient prerequisites for Reykjavík to be able to adopt integrated land use and transportation policies similar to those which have been implemented in Portland, although they will need to be somewhat adapted to the local environment.

6. Urban Growth Management in Portland

Until the late 1960s Portland's politics and planning were characterized by conservative policies, which impeded change. The city had evolved much like any other mid-sized American city and had encountered common problems such as inadequate downtown parking, bankruptcy of the city's transit company and suburban malls which threatened downtown retailing. In the 1960s and 1970s a new generation came into power, which introduced progressive integrated land use and transportation planning policies for Portland. The new policies were pioneered by two men, Tom McCall the governor of Oregon from 1967 to 1974 and Neil Goldsmith the mayor of Portland from 1973 to 1979. They emphasized public transportation, neighbourhood revitalization and downtown plans aimed at maintaining a sound base of middle class families near the downtown area to support businesses and public services. Old neighbourhoods were maintained to keep them competitive with newer suburbs. Rather than investing in highway infrastructure, public funding was used to build up an efficient public transit system. A transit mall was created in the city centre, with dedicated lanes for buses and free fares to encourage its use (Abbott, 2001).

In 1973, Governor Tom McCall, in collaboration with farmers and environmentalists pushed through the nation's first land use laws which required all cities and counties in the state of Oregon to create plans to control future growth. This included setting UGBs, using urban land wisely and protecting natural resources (Metro, 1995). This mandatory planning program, often referred to as Senate Bill 100, was administered by a state Land Conservation and Development Commission (LCDC), which can require cities and counties to revise plans that do not conform to the state goals. The legislation has often been legally challenged and gone through several state-wide referenda (Abbott, 2001). The UGB around Portland, which was implemented in

1980, includes parts of Washington, Multnomah and Clackamas counties and all or part of 24 municipalities. The original UGB had plenty of undeveloped land within it, to provide for future growth (Gibson and Abbott, 2002). Originally, the main goal of the land use laws was to preserve the natural environment of the region from urban sprawl. However, it soon became obvious that the UGB, along with progressive zoning policies, also helped in creating a compact and dynamic urban environment which fosters an efficient public transit service (Marshall, 2000).

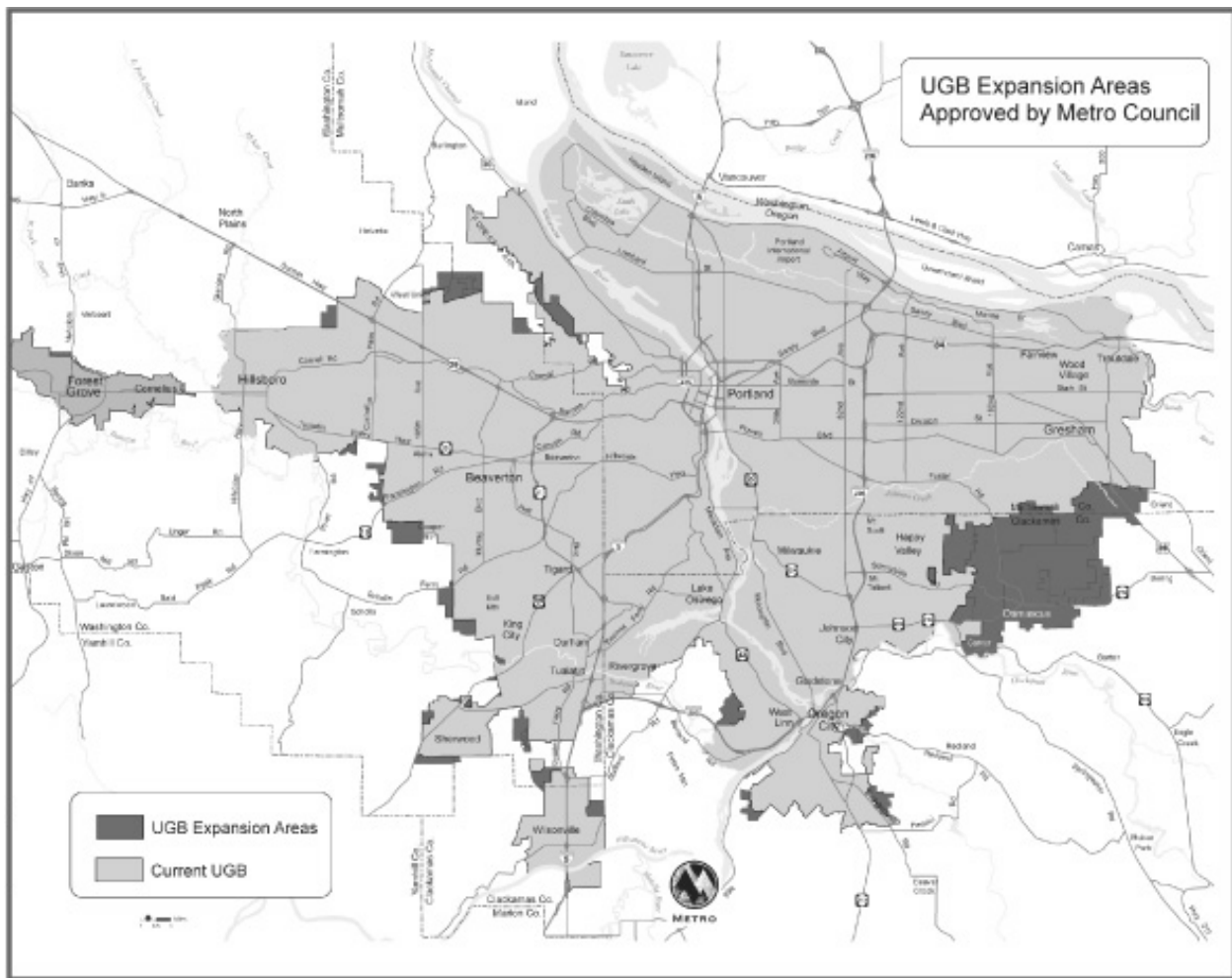


Figure 5: Portland's Urban Growth Boundary with Expansion Areas which were added in 2002. Source: http://www.spur.org/documents/img/0903_article_1_fig1.jpg

In 1978 a regional government, Metro (Metropolitan Service District), also a first in the United States, was established for the metropolitan region on the Oregon side around Portland.

Among other things, Metro is responsible for the management of land use in the metropolitan region and the establishment of the UGB. Every five years Metro has the responsibility of providing enough land for construction for the next 20 years according to growth projections (Metro, 1995). There is a lot of political debate on the potential expansion of the UGB. The biggest extension to date was in 2002 when 18,700 acres were added to the UGB's south-western corner, which is a 7% addition to the existing boundary (Oates, 2006).

The UGB has been at the center of a debate between supporters of government intervention and market advocates. Government intervention, which regulates private property for the advancement of the "common good" and regional planning bodies such as Metro are uncommon and controversial in the United States. Adversaries of the Portland planning system criticize it for being an "activist government" with "antibusiness regulations." Marshall (2000:178) argues that Portland's planning policies are "no more activist than building freeways for more malls and subdivisions; they are just activist in a different way." The critics' biggest concern about the UGB is high real-estate prices within the boundary due to the limited supply of developable land. This has raised concerns that the UGB will divert housing growth from the three Oregon counties to Clark County in Washington State, which is outside of the UGB (Jun, 2004). However, housing prices have been rising at a similar rate in many comparable cities and it is hard to determine whether increasing prices are caused by the UGB or other factors (Oates, 2006). Moreover, fast housing growth in Clark County has not pushed authorities on the Oregon side to abandon their urban growth policy. In fact, even passionate market advocates promote faster expansion of the UGB and not its abolition (Abbott, 2002).

The most serious threat to the UGB was the adoption of Measure 37 after a referendum in 2004. According to the measure, "[g]overnments must pay owners, or forego enforcement, when

certain land use restrictions reduce property value” (cited in Oates, 2006:98). Some land owners outside the UGB have complained that the boundary makes their land useless to them, since it can not be used for residential subdivision and is not suitable for farming. Today landowners have made approximately 7,000 Measure 37 claims, which it seems impossible for local or regional governments to pay. Therefore, the only alternative is to waive the land use restrictions, which means that Metro does not really have control over the UGB and zoning (Oates, 2006). However, the regulation was altered in 2007 with Measure 49 which was adopted by a referendum. Measure 49 still allows private property owners to develop a few home sites on their land, but prevents large-scale development on land outside the boundaries (Yes on 49 website, n.d.). The fact that Metro’s land use regulations could so easily be threatened as was the case with Measure 37 shows how fragile the UGB is and the inability of the government to maintain its growth regulations when faced by public opposition and land-owners’ self-interest and property rights. The UGB seems very susceptible to trends in the society and development pressures and there is a risk that it will be largely expanded or even abolished in the future.

Density numbers show that the UGB is working. Before its establishment in 1979, the area of urbanized land was rapidly increasing with decreasing population density. Since 1979, the expansion of developed land has slowed down considerably despite a high increase in population. This means that population density has increased, which is reverse to the trend in other North-American cities (Abbott, 2001). Much of the increase in density can be explained by a decrease in lot sizes for single-family homes. Surveys from 1997 and 1998 show that 66% of new development within the city of Portland, and 30% of development within the entire UGB, is infill or redevelopment. However, densities are below allowed levels due to market constraints. To improve liveability, strategies against sprawl must also include factors which are not as easily

measured, such as compact growth centres, TOD, affordable housing and good access to services and amenities (Chapman and Lund, 2004). Other cities which plan on using Portland as a model for integrated land use and transportation policies should be aware that a UGB works best when linked to a comprehensive regional planning strategy (Land and Hornburg, 1997).

7. Current Plans for Portland

Promotion of public-transit in Portland was initiated with the creation of TriMet (Tri-County Metropolitan Transit District), the region's main public transit agency, which replaced the bankrupt private bus operator in 1969 (Adler and Dill, 2004). In 1975 the City of Portland adopted the Downtown Parking and Circulation Policy (DPCP) to address excessive air pollution by setting a limit on the total number of parking spaces in the downtown area (TriMet, 2005). At the same time the Downtown Transit Mall was created with free public-transit covering most of downtown (Adler and Dill, 2004). In 1995 the DPCP was replaced by the Central City Transportation Plan (CCTMP), which takes land use into consideration. For example, the plan promotes residential development in the downtown area, where residents can walk, cycle or use public transit, as well as generating street life after office hours (TriMet, 2005).

Integrated land use and transportation planning policies have been prominent in Portland's plans since the City of Portland Comprehensive Plan of 1980 and these policies have been reflected in subsequent plans. The Oregon Transportation Planning Rule (TPR), which was adopted by the Oregon LCDC in 1991, required all metropolitan areas in the state to adopt an integrated land use and transportation plan which would increase densities along transit lines and near major employment and shopping areas, include mixed land uses in residential areas within walking and cycling distance, adopt transportation demand management measures and improve transit service and roadways (The Department of Land Conservation and Development, 2004). In 2000 Metro adopted a new Regional Transportation Plan (RTP) which was considered an excellent model of integrated land use and transportation policies and an example for other metropolitan regions (Adler and Dill, 2004).

The 2040 Growth Concept, which was adopted in December 1995, is Metropolitan Portland's integrated land use and transportation plan as required by the TPR and establishes Metro's growth strategy for the next fifty years from 1990. The plan aims at limiting sprawled development patterns, such as took place inside the UGB in the 1980s and early 1990s and, if continued, would demand rapid and extensive expansion of the UGB. The 2040 Growth Concept called for very little expansion of the UGB for the next 50 years (only about 7% of the existing area) aimed at areas needing further urban expansion and not farm or forestland (Metro, 1995). The city's light rail is part of the 2040 Growth Concept policy, along with government subsidized TOD which includes high density and mixed land use planned around transit-stations. To implement these policies, Metro initiated a TOD program with a grant from the Federal Transit Administration (FTA) that reduces the recorded land values and establishes joint development partnerships (Adler and Dill, 2004). To implement the 2040 Growth Concept, Metro adopted a Regional Framework Plan and an Urban Growth Management Functional Plan in 1997, which set requirements and tools for local governments to meet the goals set in the 2040 Growth Concept (Metro, 1995).

The Portland Transportation System Plan (TSP) adopted in 2002 is a comprehensive 20-year plan, which integrates land use and transportation planning to help implement the goals of the 2040 Growth Concept. The plan emphasizes that increasing infrastructure for automobiles to accommodate growth is not the answer because it inflicts enormous costs and impacts and can cause problems such as divided neighbourhoods, waste of valuable land, urban sprawl and negative environmental impacts. Instead, the TSP uses integrated land use and transportation policies to increase accessibility within neighbourhoods and promote alternative modes of transportation; that is, walking, cycling and public-transit. The TSP includes: policies on

coordination of transportation policies at different administrative levels; public involvement and education to support different transportation choices; and street classification that determines which travel mode should be emphasized on each street (City of Portland, 2006).

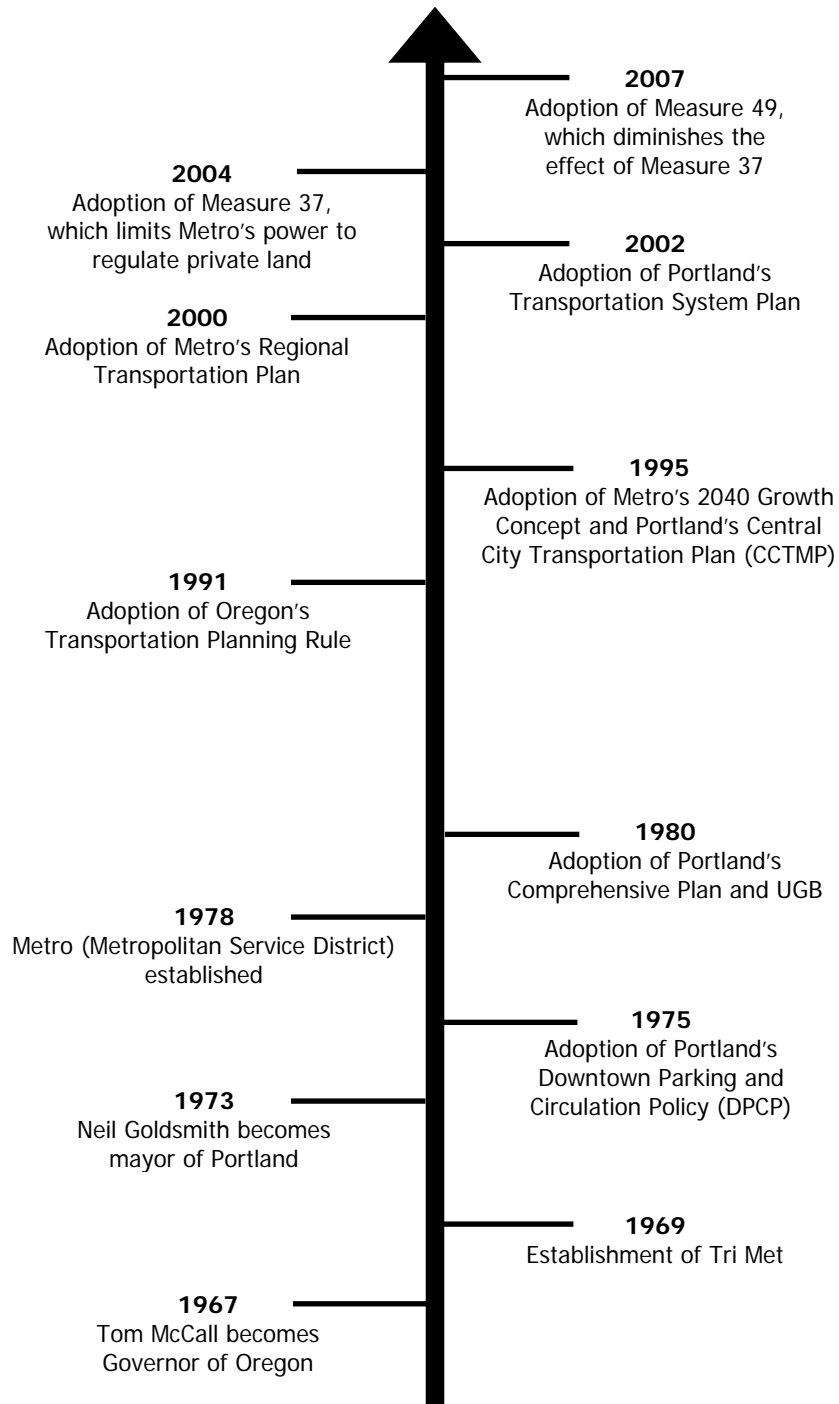


Figure 6: Timeline showing significant steps in Portland's integrated land use and transportation planning.

The consistency between the plans, coordination between different levels of government and monitoring of plans are very important to realize their goals. When talking about performance measures of planning policies, it is important to keep in mind that numbers can be deceiving and should be interpreted cautiously. Various performance standards are included in Portland's planning policies to measure their success in meeting their goals. The plans are to be monitored regularly, usually every five years. However, there seems to be a lack of reports documenting the performance of policies over a substantial period of time. For example, a report from 2004 measuring the performance of the 2040 Growth Concept only compares data from 1999/2000 to 2002 and there does not seem to have been any follow-up to that report since then (Metro, 2004). Also, no report measuring the performance of the TSP in reaching its targets of non-single-occupancy vehicles (non-SOV) mode split has been published.

8. Land Use and Transportation Policies in Reykjavík

The Association of Municipalities in the Capital Area (Samtök sveitarfélaga á höfuðborgarsvæðinu (SSH)) is a cooperation between the municipalities in the Capital Area which oversees the Regional Plan for the area and, among other things, manages the city's bus company (Strætó bs.) and waste disposal. However, SSH's Planning Committee, which consists of two representatives from each municipality and one from the Icelandic National Planning Agency, only assembled in preparation of the Regional Plan and to deal with issues that came up later related to the plan (Association of Municipalities in the Capital Area website, n.d.). It also lacks the power to enforce regional goals and local municipalities tend to focus on their own self-interest which often conflicts with that of adjacent municipalities (Bollason, 2007). The funding and implementation of transportation projects is administered by the Icelandic Road Administration (Vegagerð ríkisins), which goal is mainly to maintain an easy traffic flow and security on roads, while land use is planned by local governments. Therefore, transportation projects often have precedence over land use considerations, which results in an urban form that is divided by large transportation infrastructure and dominated by the automobile.

There seems to be a lack of a strong regional body, which could integrate land use and transportation plans and would have the power and funding to implement them. Local Agenda 21 for Reykjavík suggests that the management of highways in urban areas should be moved to local governments (City of Reykjavík, 2008). The Regional Plan itself emphasized the need to establish a permanent committee to oversee planning in the Area (Committee for the Regional Plan, 2002). Currently (2008), there is a bill for discussion in the national parliament which will give more power to the Regional Plan and requires planning committees for regional plans to meet regularly to deal with the implementation and changes to the plans (Alþingi, 2007).

The Regional Plan for the Reykjavík Capital Area 2001-2024 (Svæðisskipulag höfuðborgarsvæðisins 2001-2024) is a 23-year-plan which was adopted in 2002. It is the first Regional Plan for the area, since previous attempts at establishing collaboration between the municipalities in the Capital Area were unsuccessful. The Regional Plan's primary theme of sustainable development is reflected in its goals, which are: well defined city limits; densification and mixed land use; development of activity nodes along transportation corridors; reduced automobile-use; improved public transit, easy traffic flow on highways; traffic calming and limited car traffic in older parts of the city to make them more attractive to the public (Committee for the Regional Plan, 2002). Unlike Metropolitan Portland's 2040 Growth Concept, which aims at using traffic congestion as a way to get people to use alternative modes of transportation, the Reykjavík Regional Plan seeks to maintain high service levels on highways in and around the city (Committee for the Regional Plan, 2002).

The Regional Plan emphasizes the need to clearly define the city limits. It also states that to enable an "organic" growth of the urban environment, the plan should not be too precise about planning for future growth and defining the use of different areas. The only growth management the plan calls for is the definition of the urban area along the "Green Scarf" (Committee for the Regional Plan, 2002). The Green Scarf around Reykjavík has the main goal of preserving undeveloped land for recreational use for the residents of the city. Green corridors provide additional open space and connect the Green Scarf to the Ocean. The Green Scarf does not have firmly determined outlines, but according to the Regional Plan, land should not be built on if there is any doubt whether it belongs to the Green Scarf or not. The Plan also presumes that development should not occur on land beyond the Green Scarf, although it leaves further definition of the area to local governments (Committee for the Regional Plan, 2002). The Green

Scarf includes a generous amount of building land within the city limits for future development. Particularly since, according to the Regional Plan, average densities of new development are supposed to increase from 20 units per hectare (8 per acre, which is the same density as that of new development in Portland) to 27 units per hectare (11 per acre). In 2002 only about 54% of the land belonging to the City of Reykjavík was already urbanized (Axelsson, 2002). However, the shape of the Green Scarf allows for a sprawled development to the north and the south. Furthermore, a lack of rigorous land use policies increases the risk of sprawled development within the Green scarf and leapfrog development on the other side of it.

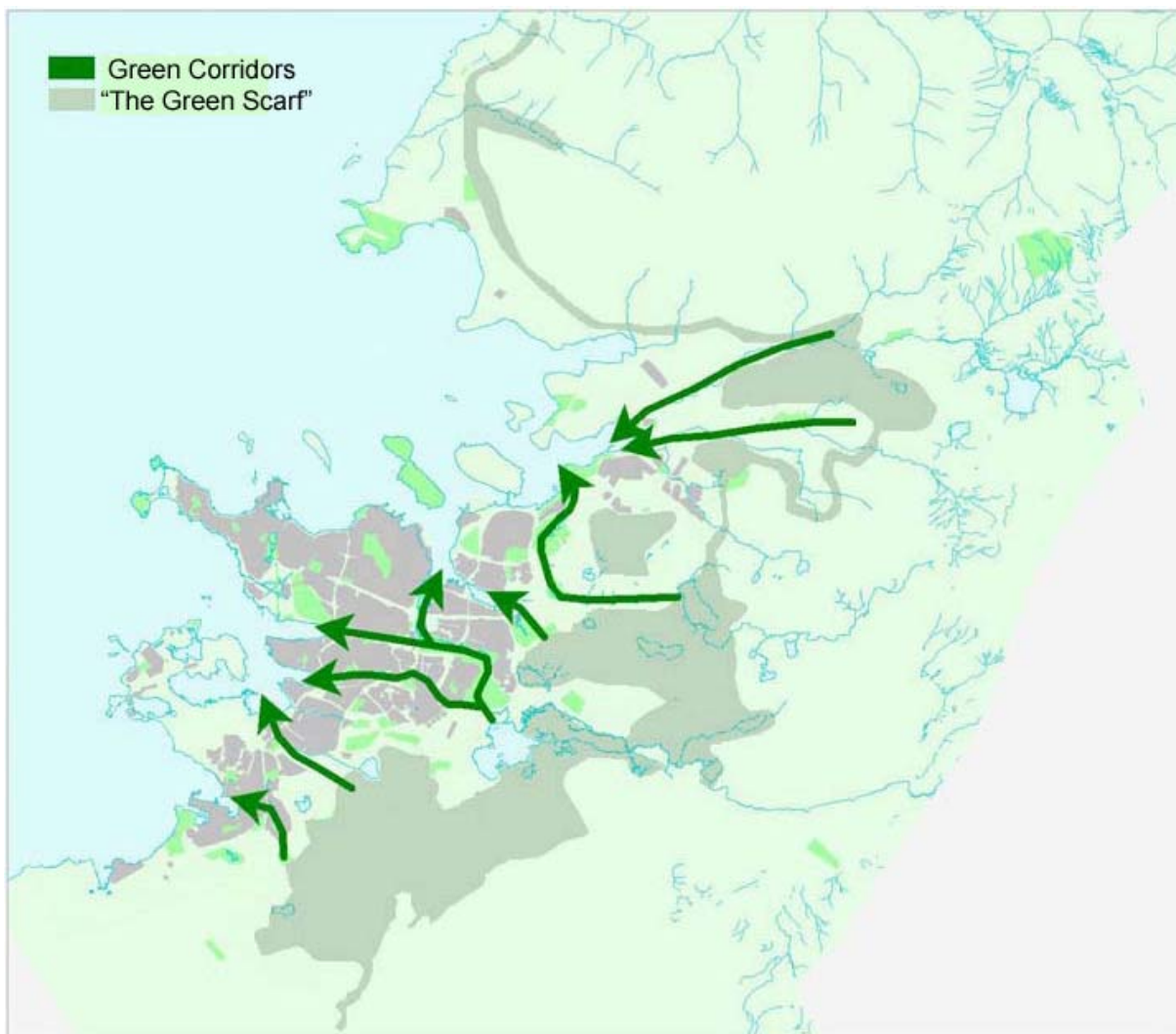


Figure 7: The Green Scarf and Green Corridors in Reykjavík. Source: Committee for the Regional Plan, 2002.

Some of the goals in the Regional Plan aim at using integrated land use and transportation planning to create a more sustainable city, but the plan does not elaborate much on how they should be implemented. The Regional Plan is implemented by local plans which are quite independent of it and often vaguely reflect the goals and objectives of the Regional Plan. Similar concerns have already been expressed by the former director of the National Planning Agency, who called for more comprehensive long term planning and coordination of policies between different disciplines and levels of planning, as well as measures to address non-compliance with planning policies (Theodórsdóttir, 2004).

Of the municipalities included in the Regional Plan, the City of Reykjavík has gone furthest towards implementing policies described in the plan. The City of Reykjavík Development Plan 2001-2024 adopts integrated land use and transportation planning policies from the Regional Plan. For example it proposes strategies such as encouraging high density and mixed land use along transportation corridors with an efficient public-transit service. It also emphasizes the importance of creating a pedestrian-friendly environment, particularly in activity areas where people are likely to use public-transit. Finally, the Development Plan proposes measures to minimize negative effects of parking on the urban form (City of Reykjavík, 2002). Other development plans in the Capital area are vaguer about integrated land use and transportation planning and more focused on local priorities. Further, there is a lack of standards to measure the performance of both the Regional and the development plans in reaching their goals, which makes it hard to detect whether the plans have been successfully implemented.

9. Transportation Modes in Portland and Reykjavík

Even though Portland is probably the most renowned example of innovative planning policies in the U.S., there are surprisingly few reports on the effectiveness of these policies. It can also be problematic to isolate the effects of a certain planning policy on travel behaviour, since it is influenced by many different factors. Moreover, numbers can be easily manipulated to prove a certain point. One way of measuring whether planning policies have been successful in reducing automobile-use is to look at the modal split between different modes of transportation.

Portland has an extensive bicycle network and is known for being a good city for bicycling. According to census data, the city is in the top five of 64 U.S. cities in terms of percent of population commuting by bicycle, although the percentage of bicycle commuters is very low compared to European cities, around 0.8%. The city also ranks high compared to other U.S. cities when it comes to walking to and from work with over 3% of residents commuting on foot. Compared to other similar-sized American cities Portland also ranks high on transit-use, with over 7% commuting by public-transit in 2000, which was a 1% increase from 1990, while the national transit share of commute trips dropped by more than half percent, from 5.27% to 4.73%. However, these numbers only cover work commutes, which is about 20-30% of all trips. Surveys on transit-use in TODs also indicate that residents of such neighbourhoods still use the automobile for most trips although public-transit-use is higher than in other areas (Adler and Dill, 2004). Although Portland ranks relatively high for use of alternative modes of transportation compared to other U.S. cities, it is still very automobile-dependent compared to European cities, even compared to Reykjavík. It is surprising that, considering how much there has been written about Portland's planning policies, there are few reports on modal split in the city, particularly since the results are this inconclusive.

To evaluate the performance of integrated land use and transportation planning policies, it is equally important to look at numbers that indicate whether the policies have been successful in reducing travel distances. In terms of per capita vehicle miles traveled (VMT), Portland ranks lower than most other U.S. cities with an actual decrease of 7.4% between 1996 and 2001, while VMT increased in most other comparable cities (Adler and Dill, 2004). On the other hand, census data shows that average commuting time increased between 1980 and 2000, particularly during the second half of that period (by 3 minutes), although travel times increased less than in other comparable cities (Federal Highway Administration website, n.d.), probably because of a decrease in VMT. Meanwhile, congestion increased more in Portland than in any other region from 1982 to 2000 (Adler and Dill, 2004). This indicates that integrated land use and transportation planning in Portland has been successful in reducing commuting distances. For instance, research has shown that average commuting distances in Portland are approximately 3 km shorter than commuting distances in the Twin Cities (Minneapolis and St. Paul) (Levinson and El-Geneidy, 2007). Metro projects that congestion will continue to increase which is part of the strategy to get people to consider using alternative modes of transportation. However, Adler and Dill (2004) caution that debate on whether money should be spent on expanding roadways or on infrastructure for alternative modes of transportation will probably become more intense as congestion continues to increase. Thus, Portland's integrated land use and transportation planning policies are still threatened by the strong automobile-culture of North-America and a potential lack of funding.

Compared to most European cities, the modal share of private automobile trips in Reykjavík is very high, around 67% of all trips and 88.4% of work commutes, while the modal share of walking and cycling combined is just over 19% of all trips and 7.9% of work commutes.

The high modal share of the private automobile has been explained by low travel costs, high service levels on streets and a tendency to use a car for very short trips (City of Reykjavík, 2006). Even though travel distances by car are generally very short in Reykjavík due to the small size of the city, VMT per capita has been increasing rapidly in recent years, unlike in Portland where VMT per capita has been decreasing. For example, VMT per capita in Reykjavík increased by 5.3% between 1998 and 2002 (City of Reykjavík, 2006). However, the share of walking and cycling is very high compared to U.S. cities, even compared to Portland. This might partly be due to the smaller size of the city, higher densities and cultural factors.

Reykjavík's public bus system is run in collaboration by the municipalities in the Capital Area. Public-transit has approximately 4% modal share of all trips and 2.9% of work commutes in the Capital Area, which is a much lower percentage than in most European cities and Portland. For example in similar sized Danish and Norwegian cities the modal share of walking and cycling is around 25-35% and the share of public transportation is between 10 and 15% (City of Reykjavík, 2006). The number of public-transit users in the City of Reykjavík declined by half between 1970 and 2001, while the kilometres travelled by buses increased from 3.5 million to 5.5 million kilometres (City of Reykjavík, 2002). This indicates that travel distances in the city have increased considerably over the last decades. One explanation for the low share of public transit is that, instead of being subsidized by the national government, the transit company pays taxes to the government (City of Reykjavík, 2006). Recently, Strætó bs., the public transportation company, has implemented several initiatives to encourage public transit use, such as creating separate bus lanes on high volume traffic streets, giving buses priority on traffic lights and offering free bus passes to high school and university students (Strætó bs. website, n.d.). However, it is still too early to detect the effect of these initiatives on public-transit use.

It can be problematic to compare numbers on modal split between countries since measurements might be different. It is also important to keep in mind, that factors such as the different size and culture of the two cities may have considerable impact on the urban form and travel behaviour. The data on travel behaviour in Reykjavík comes from the first major origin-destination survey that was done in Reykjavík in 2002. No comparable data is available, so it is not possible to see changes in travel behaviour over time (Sigurðsson, 2004). Scandinavian cities in general have a much higher modal share of alternative modes of transportation than both Portland and Reykjavík. However, they are not necessarily a suitable model for Reykjavík to reduce automobile-use. They are older and have always been less automobile-oriented than Reykjavík. Furthermore, Reykjavík has traditionally compared itself to Scandinavian cities and is already under a lot of influence from their planning systems. Therefore, it is useful to look for other examples of good planning to address urban problems such as urban sprawl and extensive automobile-use. At the same time, it is emphasized here that no city should adopt the planning system of another city in its entirety and that Reykjavík could also learn from other cities, although this paper focuses on Portland.

The numbers show that Portland's progressive planning policies have been moderately successful in reducing travel distances and promoting alternative modes of transportation. Portland has made a serious attempt at attacking North-American suburbanisation and automobile-culture with positive results, although it still has a long way to go to reach the same levels of density and modal share of alternative modes of transportation as European cities. Nevertheless, the city distinguishes itself from other North-American cities in terms of governance and liveability which other cities can learn from. It is important to keep in mind that integrated land use and transportation planning is a long-term solution to reduce automobile-use

which will not happen over-night. Portland might need to adopt more market strategies, such as congestion tolls and other incentives to have a greater effect on travel behaviour, particularly in the short term. The next chapter will discuss the effects of integrated land use and transportation planning in general and accompanying strategies which can influence housing location choices and travel behaviour.

10. The Effects of Integrated Land Use and Transportation Policies

Most researchers agree that integrated land use and transportation policies need to be accompanied by other strategies to change housing choices and travel behaviour. The most common explanation for the high percentage of private automobile-use in the U.S. (86.6% of all trips) is that no other mode of transportation rivals the freedom, flexibility and overall cost of the automobile. It has been argued that as long as public-transit can not compete with the private automobile in door-to-door travel time, people will continue to drive (Levinson and Krizek, 2008). Researchers have pointed out that high infrastructure costs caused by urban sprawl and automobile-culture is split between taxpayers in general, and that those who live in the suburbs and rely most heavily on the private automobile do not pay their fair share. It has often been pointed out in the literature that it makes sense for private developers to build in suburban areas since land value is lower and infrastructure costs are often borne by the public sector (Frank, 2000; Moore et al., 2007; Oates, 2006; Óskarsdóttir, 2004).

Researchers debate whether people in general desire to live in single-family housing suburban developments or if there is a demand for higher density housing with easy access to public transit and services. Pickrell (1999) argues that land use only affects travel behaviour through its influence on travel costs and as long as people can afford the travel costs associated with longer distances and suburban living, they will usually choose to live in a big house on a large lot in a typical suburban neighbourhood. Infill and intensification in established neighbourhoods is often controversial and residents fear densification and the influx of poorer families in neighbourhoods of single-family homes, increased thru-traffic and loss of open space. However, it often appears as though the residents are more concerned with the quality of the neighbourhood rather than increased densities per se and where infill development consists of

high quality design, residents have been more supportive of densification (Chapman and Lund, 2004). High density housing generally has a negative image in North-America and, to a lesser extent, in Iceland. This is something that could be changed by creating and properly marketing attractive compact neighbourhoods.

It has been argued that people who choose to live in compact mixed-use environment such as TODs, do so because of self-selection, that is, they already used public-transit, walked and/or cycled where they lived before. Even if this is true, it is very important to provide an option for people who want to live in a transit-oriented and pedestrian-friendly environment with good accessibility. Many North-American cities today do not offer many alternatives to sprawled residential suburban neighbourhoods where people are dependent on the private automobile and some surveys indicate that there might actually be an untapped demand for more transit and pedestrian-friendly settlements (Dill, 2006). It is a good start to use integrated land use and transportation policies to provide that alternative. It is certain that people will not start using public transit, cycling and/or walking to their destinations without an urban environment that is inviting to other modes of transportation than the private automobile.

However, it is not enough to design TODs if people prefer to live in automobile-oriented suburbs and travel by car. A coordinated group of public policies is needed to affect people's housing location and travel choices (Levinson and Krizek, 2008). Chapman and Lund (2004:227) emphasize that, "[o]ther regions hoping to build on Portland's experience will need to find ways to coordinate policies at state, regional, and local levels, and to focus on the character of development as well as density". It is also very important to educate people about the negative effects of extensive automobile-use. People need to be aware of the negative consequences and costs of sprawl and extensive automobile-use for them to make an informed decision on where to

live and how to travel. Goals to reduce automobile-use will not be reached without the participation of citizens who are willing to change their lifestyle and travel behaviour. Integrated land use and transportation planning policies should be supported with market strategies such as proper pricing of public infrastructure and services, increased parking fees, congestion pricing and incentives to promote carpooling (1000 Friends of Oregon, 1997). Such strategies along with strict land use policies might be controversial in the short term, but considering the environmental and health impacts of automobile-use and impending oil scarcity with increasing gas prices, it makes sense to plan for a future that is less reliant on the automobile than most North-American and Western-European communities are today. Therefore, integrated land use and transportation planning seems to be a rational choice for Reykjavík to reduce sprawl and automobile-use.

11. Policy Recommendations - What Can Reykjavík Learn from Portland?

Based on the analysis of Portland's integrated land use and transportation planning, there are several policy initiatives which Reykjavík could learn from and adapt to the local environment.

The policies recommended mostly aim at reducing urban sprawl and automobile-use and creating an attractive and sustainable city environment. They also include changes to the regulatory framework to enable comprehensive long-term planning.

1. Integrate land use and transportation planning

To successfully reduce urban sprawl and automobile-use and to develop a more sustainable and attractive city environment, Reykjavík needs to integrate land use and transportation policies.

Highway planning has been administered by the national government and has thus received more resources than land use planning. To improve accessibility and liveability in the city's neighbourhoods, land use and transportation planning should be integrated and managed by the same authority (see policy recommendation no. 4).

2. Plan for growth

The vague land use designations and urban growth management on the regional level, within the Green Scarf, makes it easy for local governments to define future growth based on their own self-interest and that of private developers. This might lead to haphazard urban growth or leapfrog development as has happened beyond London's Green Belt. To prevent this from happening, Reykjavík should attempt to guide urban growth toward convenient growth areas with mixed compatible land uses, as has been done in Portland.

3. Create comprehensive plans

Urban containment policies, such as the Portland UGB and the Reykjavík Green Scarf, should always be accompanied by strategic growth policies. The Capital Area Regional Plan features strategies such as higher densities, mixed land use and development along transportation corridors. However, it does not include market strategies such as proper pricing of infrastructure, congestion and parking. Further, these growth policies are not adequately reflected in the city's local plans and new development does not necessarily adhere to these guidelines. This leads to the next policy recommendation.

4. Establish a powerful regional planning authority

To enforce the goals of the Regional Plan, a regional planning authority needs to be created in the Capital Area. This planning authority should operate all year round and have a clear regulatory framework. It should be appointed by the national government to make it independent of local governments and have the power to require local governments to adhere to its plans. The Reykjavík Regional Plan includes a lot of good planning policies that have failed to be employed by local governments, which are free to interpret and implement the goals whichever way they like, because of a lack of regional authority to enforce the plan.

5. Adopt standards to measure the performance of planning policies

To be able to determine whether a planning policy has been successful or not, it is important to include standards to measure the performance of various policies in the Regional Plan. This way the Regional planning authority can determine whether the local governments are abiding by the requirements of the Regional Plan and measure their performance in implementing its policies.

This will also help in monitoring and modifying strategies which have not been successful in meeting planning goals.

6. Prioritize transportation projects in favour of public transit, walking and cycling

There has been a tendency in Reykjavík to oversupply costly highway infrastructure instead of investing in public-transit and pedestrian and bicycle facilities. Infrastructure for the private-automobile is very expensive and the cost is often spread evenly among all tax-payers, some of which might not be using it. It is very important to integrate plans for different modes of transportation and put more resources into plans for other modes than the private automobile. This way, those who do not own a car will receive their fair share of services and more people might be encouraged to use alternative modes of transportation.

7. Plan incrementally

To create a more liveable city with an interesting and attractive urban environment, cities should be planned and developed incrementally with a long-term focus. That is, large developments with homogenous design should be avoided, and instead, smaller developments which emphasize the preservation of natural and cultural heritage, should be encouraged. It is important to ensure variety in the built form and provide alternatives for people with different needs and preferences. A diverse and interesting environment is also more attractive to pedestrians and encourages people to use alternative modes of transportation.

12. Conclusion

By following these recommendations and adapting them to local circumstances, Reykjavík should be able to reduce sprawl and automobile-use. Implementing these strategies might involve some initial costs, but would soon be paid off by reduced investment in large transportation infrastructure and possibly increased land value. Moreover, the value of an attractive and sustainable city environment, that attracts newcomers and fills the citizens with pride, is hard to quantify. That kind of civic pride is common in Portland, where the residents boast about the beautiful environment; the safety of the streets; the efficiency of the public transportation system; the high quality public spaces; and the walkability of their city. Reykjavík is certainly not known for the quality of its urban environment and planning. The citizens are more proud of the surrounding natural environment which attracts a large number of foreign visitors each year. Undeniably Reykjavík's downtown core with its eclectic urban environment, historic buildings, cafes and bars has its charm, but beyond that the city is mostly characterized by typical residential suburbs. However, the cozy pedestrian-friendly atmosphere of the downtown demonstrates that it is indeed possible to create an attractive environment with dynamic street life on this isolated island just south of the Arctic Circle.

It is important to be aware that good planning takes time to be implemented and that a charming community can not be created in one day, but is formed by long-term planning that respects the history and culture of the place. An emphasis should be put on creating a sense of place, listening to the voices of the residents and nurturing the local culture. The planning of a city is a long-term assignment, which never ends. It needs to be done in a holistic way, involving professionals on different administrative levels and from different disciplines, as well as the public. It took Portland over four decades of innovative planning to get to where it is today. Such

comprehensive planning will be a challenging, but constructive endeavour for Reykjavík, which has tended to rush into large infrastructure projects without looking far ahead. This might largely be due to the impatient and energetic Icelandic culture, which could just as well be motivated to implement sustainable planning policies. The general public interest in planning matters in Reykjavík today shows that the citizens do care about the development of their environment. This interest and high expectations towards the urban environment should inspire high quality planning in Reykjavík as it has done in Portland.

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