

Chapter 3

Sustainable Choices

Do unto future generations as you would have them do unto you - Robert Gilman

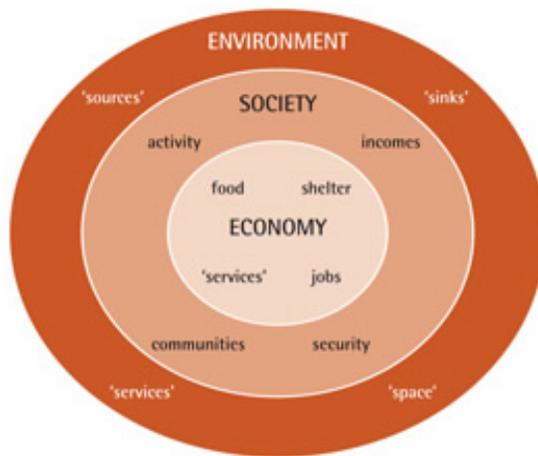
Introduction

What Is Sustainability?

The Washington Department of Ecology’s working definition is: *meeting the needs of the present without compromising the ability of future generations to meet their own needs.*

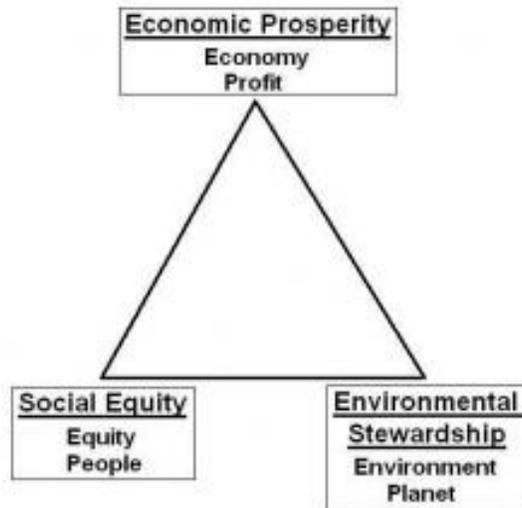
The U.S. Environmental Protection Agency definition for sustainability is: *the ability to achieve economic prosperity while protecting the natural systems of the planet and providing a high quality of life for its people.*

The environment, society, and economy are interconnected. A healthy economy is dependent on a healthy society, and both are dependent on a healthy environment. A disruption in any one area affects the health of the other two.



Sustainable communities acknowledge that there are limits to the natural, social, and built systems upon which we depend. Key questions asked in a sustainable community include: “Are we using this resource faster than it can be renewed?” and “Are we enhancing the social and human capital upon which our community depends?” Sustainability is a holistic approach to living and problem solving that addresses social equity, environmental health, and economic prosperity. It is also referred to as the 3Es: Equity, Environment, Economy or the 3Ps: People, Planet, and Profit. An approach to business that focuses on the 3Es or the 3Ps is known as the Triple Bottom Line. It is

most useful to think of sustainability as providing a guiding vision for our community to aid in decision-making, rather than as a specific goal.



For sustainability to take hold, the economic component of the model needs to be examined. Our current economic system is based on free markets and allocates resources efficiently as long as the prices are right. However, many of the services provided by the environment do not carry a market value, and thus they are often omitted from economic equations. Thus in a free market, an energy company that burns coal will pay for the use of the coal mined from the earth, but not for its use of the clean air and water that are polluted during operation. In other words, when it comes to the environment, the free market pricing is wrong.

To adjust pricing to reflect the true social costs requires government intervention in the market to discourage activities that damage the environment. Recommendations include charging fees or pollution taxes for the right to pollute or degrade the environment. This can be accomplished by auctioning off rights to pollute (carbon taxes), transportation congestion pricing, wetland banking, and transfer of development rights. These programs provide financial incentives to reduce pollution and degradation of natural capital.

Without intervention, conventional economic approaches focus mainly on the short-term monetary values of marketable resource commodities (timber, land, farm crops, fish). A sustainable economic approach seeks to also value the non-market services provided by natural capital over time. Thus intact forests and farmland are valued for their carbon sequestration functions and their ability to produce food and fiber for future generations. With a long-term perspective, the decision to develop agricultural land for a shopping center today would at least take into account future food security.

Life depends on ecological services, and it seems safe to assume that future generations will need the same kind of natural capital per capita that we take for granted today. The growth trends that underpin our economy (constantly increasing population and consumption) come at the expense of accelerating depletion of natural

capital: reduced biodiversity, air/water/land pollution, loss of productive lands, atmospheric change, etc. A sustainable community needs to look at reversing these trends by properly accounting for natural capital in local decision-making.

What Would a Sustainable Clark County Look Like?

In order to move our community toward sustainability, we need to have a vision of what we would like our ideal future community to look like.

- Consumption of resources is in balance with nature's ability to replenish them. Source reduction creates less waste, and products are reused, recycled or composted rather than thrown away whenever possible;
- Most toxic chemicals are eliminated and nontoxic management practices are widespread;
- Energy consumption is balanced with our ability to produce clean energy. Energy is used efficiently and is produced from clean, renewable sources such as wind, solar, biomass, geothermal, small-scale hydroelectric, and other emerging technologies;
- Consumption of non-renewable and polluting petroleum products is reduced to zero. Transportation energy consumption comes entirely from renewable energy sources;
- Individuals and families can find safe, affordable housing near their places of work with access to services such as good schools, parks, shopping, health care, and public transit;
- Partnership with individuals and local organizations; schools, museums, churches, businesses, and community groups build meaningful connections across generations and cultures and have lasting community impact.
- Green buildings are the norm and are encouraged through policies at the city and county level. Buildings are aesthetically-pleasing, energy efficient, water conserving, durable, non-toxic, and built maximizing the use of high recycled-content materials;
- The needs for housing, commerce, services, agriculture, open space, and habitat are balanced;
- Sustainable agricultural practices support landowners and laborers while conserving natural resources and biodiversity, maintaining healthy soils and ecosystems, and providing a variety of foods for local communities;
- Air is clean and poses no threat to human health or environmental quality;
- Water is clean and adequate safe water supplies accommodate residential, agricultural, industrial, and other uses;
- Parks and open space are abundant, well maintained, and readily accessible to all residents.



During a typical day on Planet Earth we lose:

- 116 sq. miles of rain forest
- 72 sq. miles to encroaching deserts
- 40 to 250 species

While we add:

- 250,000 people
- 15 million tons of CO₂

Assessment of Conditions

Air – Protecting air quality is critical to public and environmental health. Air pollution causes lung disease and affects the environment by harming soil, water, crops, forests, wildlife and visibility. The main sources of air pollution in Washington are motor vehicles (over 50 percent), outdoor burning, and wood stoves. In Clark County, the transportation sector accounts for more than half of estimated total carbon emissions.

Built Environment – Buildings have a substantial impact on the environment. Inefficient resource use leads to both large environmental impacts and high operating costs through construction as well as operations for owners and occupants. Many buildings also contain chemicals that pollute the indoor air, which may harm the health of building occupants. Green building refers to design, construction and deconstruction practices that significantly reduce building impacts on the environment focusing on seven areas:

- Sustainable site planning;
- Conservation of materials and resources;
- Energy efficiency and use of renewable energy;
- Water conservation and efficiency;
- Indoor air quality
- Whole-building cleaning and maintenance issues (including chemical use);
- Recycling programs, food and beverage purveyors, and waste handling.

Green buildings will be a critical component of creating sustainable compact communities and sustainable cities. There are a growing number of examples in Clark County that demonstrate green building principles: Vancouver Hilton, Firstenberg Center, the Columbian building and energy efficient residential homes.

Climate Change – Eleven of the last twelve years have been the warmest on record. Because climate change is vast and global, it is hard for any one of us to believe that we can make a difference. But we can and in doing so, we can find solutions that reverse our contributions to climate pollution, move away from our dependence on foreign oil, and grow the economy through investments in clean energy. Effective sustainable management of solid waste, air, water, and land resources will position communities to create the flexibility to respond to climate change. Washington State, in partnership with the Western Climate Initiative, calls for a return to 1990 greenhouse gas levels by

2020, and then further reducing to 50% below 1990 levels by 2050. Thirty-one cities in Washington State, representing two million citizens, have signed onto the US Mayors Climate Protection Agreement including: Battle Ground, Camas, Vancouver, and Washougal. The Cool Counties Climate Stabilization Initiative was recently launched with King County as the first signer.

Energy - Two major sources of electricity supplying Clark County are large regional hydroelectric and local natural gas facilities. Large hydroelectric projects can damage or eliminate habitat and adversely impact fish populations. The U.S. economy's vulnerability to natural gas prices and the acknowledgement of the environmental and health costs of burning fossil fuels are leading to the rapid growth of the clean-energy market and decreasing prices through economies of scale and technological advances. Wind speeds in Clark County generally do not support the use of windmills. There may be sites with potential such as the ridgelines at Camp Bonneville. Opportunities for wind power do exist elsewhere in Washington and Oregon, and would require third party arrangements and/or power utilities to establish dedicated Clark County wind turbines. Clark County's latitude and weather patterns constrain some solar applications; however, tapping the power of the sun through photovoltaic or other technologies may still be practical and should be explored and employed where possible. Changes in Washington State law and other incentives should contribute to a growing supply of green power in the state.

Food - Agriculture has historically played an important role in Clark County's economy. Sustainably managed working landscapes like farmland can provide significant environmental and quality of life benefits, such as: open space, healthy microclimates, and carbon sinks. Local food enterprises include: farmers markets, community gardens, subscription farms, and food cooperatives. These enterprises contribute to the county's food security; provide fresh nutritious food; and protects land from urban sprawl. Organic and sustainable farming practices are especially important for maintaining agricultural vitality because they reduce the harmful environmental and health effects of pesticides and herbicides and protect long-term soil quality.

Health - Widespread use of toxic products can damage human health and has been linked to cancer, reproductive problems, and hormone dysfunction. Pesticides and herbicides applied to homes, gardens, buildings, agriculture, rights-of-way, and other areas run off into our waterways and threaten the health of wildlife. Diesel particulates are a major contributor to asthma.

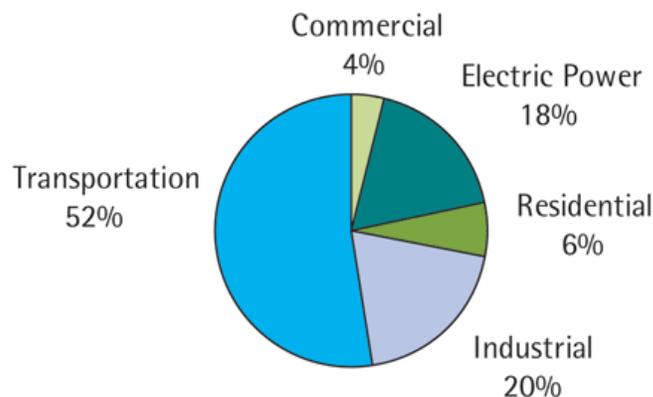
Land Use - Washington's Growth Management Act is intended to manage growth and development to protect open space and agricultural land and concentrate development near urban centers where jobs are located. Such planning aids in minimizing long commutes, relieving traffic congestion, and reducing air pollution from automobiles. Uncontrolled growth diminishes our ecosystem capacity by depleting water supplies, agricultural lands, and diversity of habitats. Additional work is needed in Clark County to improve building codes, urban forestry, walk-ability, and mixed use development. Sustainability acknowledges that development will continue, however, that development must keep a high quality of life while not depleting resources or damaging the environment for future generations.

Parks and Open Spaces - The presence of parks and open space enriches a community's quality of life. The availability of active (playgrounds, playfields, etc.) and passive (hiking trails, picnic areas, etc.) recreational opportunities offers public health benefits. Parks and other public facilities are also used for community events such as art fairs, parades, or holiday gatherings. These events foster social cohesion and cultural enrichment, bringing people together and building a sense of community. Trees throughout the community help to capture CO₂ and together with diverse natural environments create critical habitat for wildlife.

Population – The projected population of Clark County by the year 2030 is 568,000 (compared to 415,000 in 2007). This is the equivalent to adding another City of Vancouver. Increasing populations exacerbate all of these conditions discussed in this section.

Solid Waste - Clark County's quality of life depends upon the availability and use of natural resources such as timber, metals, petroleum, and others. Some of these resources are renewable, but our consumption at current rates will outpace nature's ability to replenish them. Waste reduction and recycling efforts focus on ways to achieve a balance between resource consumption and renewal, and ensure the highest end use for our resources.

Transportation - Transportation has a significant impact on the economy, environment, and quality of life. Traffic congestion causes costly delays resulting in lost productivity, less time with families, wasted resources, and stress. An over-reliance on automobiles also encourages low-density land use patterns that can waste precious land and lead to habitat fragmentation. In Washington State, 52 percent of our CO₂ emissions from fossil fuels stem from transportation uses including commute traffic, freight, and planes. Our transportation sector produces more than three times as much climate pollution as electricity production does.



CO₂ emissions from fossil fuels in Washington State
Total: 78.7 million metric tons

Americans' consumption of gasoline also contributes to dependence on foreign oil and makes us vulnerable to price increases and supply disruptions. Oregon and Washington have nearly 30 ethanol and biodiesel projects in development. If all of those refineries were built, they would create enough capacity to produce 1.3 billion gallons a year of fuel made from plants, kitchen grease and animal fat instead of crude oil.

Water –As residents of the rainy Pacific Northwest, we might assume that clean, fresh water will always be ours for the asking. Water provides fish habitat, recreational opportunities, water for crops and water to drink. But pollution, urbanization, and other population pressures challenge this assumption. The county depends on aquifers: Pleistocene Alluvial, Upper Troutdale, Lower Troutdale, and Sand and Gravel Aquifers. Deep aquifers are recharge limited and Endangered Species Act issues limit further uses of shallow uplands. *When the well is dry, we know the worth of water* – Ben Franklin.

Assessment of Sustainability Management Systems

Sustainability management systems provide a systematic methodology to implement sustainable practices and activities for a business or governmental entity. A sustainable practice or activity acknowledges the relationship between the environment, economy and social equity and aims to remedy root causes rather than dealing with undesirable consequences.

The Natural Step (TNS) is a scientifically based framework for sustainable decision-making. Founded in 1989 by Dr. Karl Henrik Robert, a scientist at a leading cancer research institute in Sweden, the Natural Step's four objectives provide a methodology for individuals, businesses and organizations to decide how best to promote sustainability. If an activity continually violates the system conditions, it cannot be sustained over the long term.

Objective 1: Reduce what we take from the Earth (Mining and Fossil Fuels).

This means substituting minerals that are scarce in nature with others that are more abundant, using all mined materials efficiently, and systematically reducing dependence on fossil fuels.

Objective 2: Use safe biodegradable substances that do not cause the spread of toxins in the environment.

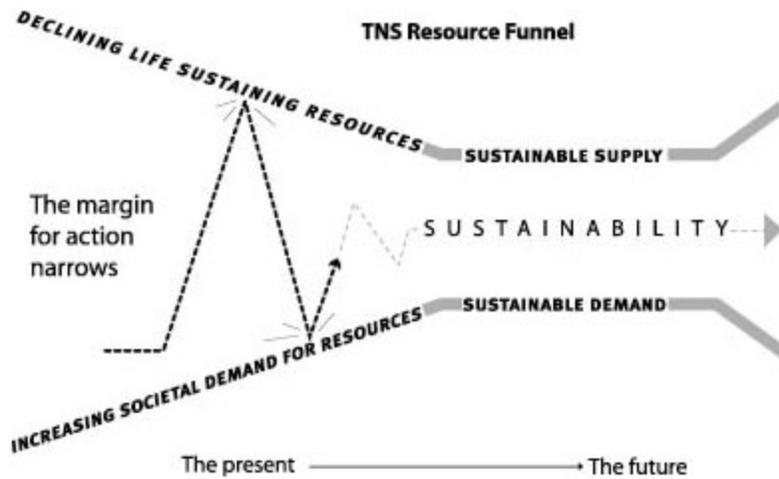
This means systematically substituting persistent and unnatural compounds with ones that are normally abundant or that break down more easily in nature.

Objective 3: Protect our soils, water and air.

This means drawing resources only from well-managed ecosystems, systematically pursuing the most productive and efficient use both of those resources and land, and exercising caution in all kinds of modification of nature.

Objective 4: Meet basic human needs. This means using all of our resources efficiently, fairly and responsibly so that the needs of all people on whom we

have an impact, and the future needs of people who are not yet born, stand the best chance of being met.



The Natural Step's Resource Funnel is a simple metaphor that illustrates the global trends of resource availability and functional capacity.

Imagine the walls of giant funnel, viewed from the side. The upper wall is resource availability and the ability of the ecosystem to continue to provide services. The lower wall is societal demand for resources that are converted into goods and services such as clothes, shelter, food, transportation, and discretionary purchases.

The systems that provide essential life-supporting goods and services for society's continued existence on the planet, such as food, clean air and water, productive topsoil and climate control, are in decline. At the same time, society's demand for these resources and services is increasing. The Earth's population is currently at more than six billion people and growing. Our consumption level is also increasing. As society's demands increase and the capacity to meet this demand declines, society moves into a narrower portion of the funnel. As the funnel narrows there is less room to maneuver and there are fewer options available.

With the awareness that we all live in this funnel – as individuals, businesses, governments, families, schools. - we have the opportunity to change the impacts we are having and be more strategic when making choices and long-term plans. Through innovation, creativity and the unlimited potential for change, we can catalyze the shift toward sustainability and begin to open up the walls of the funnel. Organizations, which anticipate these changes, can position themselves so they avoid the walls and invest towards the opening of the funnel and a sustainable future.

The Natural Step is not intended to be used as a way to “check-off” accomplishments, but rather as a compass to see where an activity is on the “sustainability continuum.” It encourages decision makers to:

- Use clean renewable sources of energy instead of fossil fuels;
- Return waste to productive uses through closed loop systems;
- Eliminate the use of toxic chemicals;
- Preserve or increase water supplies to meet the needs of a growing population, the economy, and wildlife;
- Recognize the value of natural systems as a whole and not just the individual raw materials. Forests don't simply supply timber, they provide services such as converting carbon dioxide to oxygen, regulating temperatures, and storing water.
- Contribute to a diverse local economy that will be more successful at providing for a healthy, thriving community.

The Natural Step uses a process referred to as “backcasting,” which is the opposite of forecasting. Rather than trying to forecast the future and then plan for it, backcasting establishes the future based on the four system conditions and challenges the individual, business or organization to begin taking steps towards that sustainable vision. This involves creating a vision, assessing impacts, setting goals/metrics, writing projects plans, getting baseline data, and creating communication plans for use by management and elected officials.

Environmental Management System (EMS) is based on the concept of continuous improvement and the “Plan-Do-Check-Act” process. It can be used to provide a structured process to implement The Natural Step objectives. Organizations audit their management system to assess the degree of conformance to specified standards, such as ISO 14001. Some organizations expand their audits to look beyond conformance to focus on:

- What are the key sustainability risks and challenges and are we effectively managing these issues?
- Are our sustainability objectives complementary with, or competing with, our other business objectives?
- Are our management systems designed to deal with emerging sustainability risks that could affect long-term success?

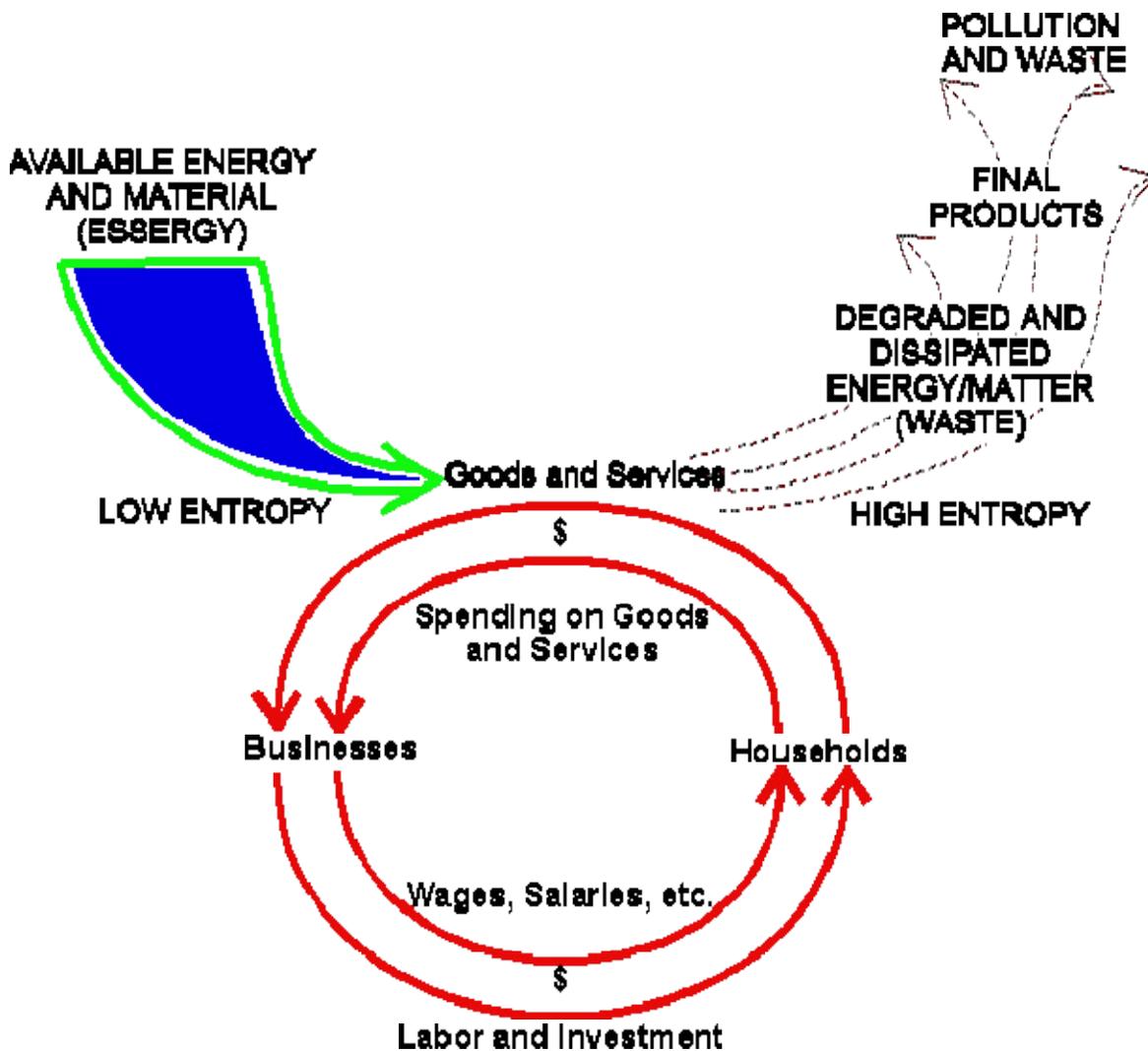


In addition, organizations are required to establish objectives and targets. Sustainability targets differ from traditional indicators of economic or environmental progress; they highlight the interconnectedness of the environment, society, and economy. Sustainability targets show whether a community is getting better or worse at providing all its members with a productive, enjoyable life now and in the future.

Sustainability goals that could be measured and monitored through an EMS approach:

- Energy sources are 100% renewable
- Zero waste
- Zero discharge of persistent bio-accumulative toxins (PBTs)
- Zero loss of biodiversity and productive natural systems

Ecological Footprint - The Ecological Footprint Analysis was developed in 1996 by Mathis Wackernagel and William Rees as a quantitative tool to measure sustainability. The diagram below illustrates how the circular flow of our economy is dependent on energy and material resources extracted from nature that pass through the economy and are eventually returned to the ecosphere as waste. The tool measures how much land and water area an individual, a family or even a city or country requires to produce the resources it consumes and to absorb its wastes under prevailing technology.



By measuring the Ecological Footprint of a population we can assess our overshoot (temporarily exceeding the long-term carrying capacity), which helps us manage our ecological assets more carefully. Ecological Footprints enable people to take personal and collective actions in support of a world where humanity lives within the means of one planet. For example, carbon dioxide emissions can be converted into the acreage of treed area needed to transform that CO₂ back into healthy atmospheric oxygen. This tool helps us know where we stand today and also to plan for our future.

As long as we do not know how much of nature's capacity we use or how our resource use compares to existing stocks, overshoot may go undetected - increasing the ecological deficit and reducing nature's capacity to meet society's needs.

The Ecological Footprint clarifies the relationship of resource use to equity by explicitly tying individual and group activities to ecological demands. The ecological footprint recognizes that people have an impact somewhere, even if trade and technology obscure it. These connections help decision makers more accurately and

equitably shape policy in support of social and environmental justice because increasing local carrying capacity reduces demands elsewhere.



From World Centric: USA is the country with the largest per capita footprint in the world - a footprint of 9.57 hectares. If everyone on the planet was to live like an average American, we would need 5 planets, or our current planet's biocapacity could only support about 1.2 billion people. On the other hand, if everyone lived like an average person in Bangladesh, where the footprint is only 0.5 hectares, the earth could support roughly 22 billion people.

Resources

Community Choices - Community Report Card that measures the health of Clark County using recognized indicators to drive long-term systemic change.

www.communitychoices.org

Ecological Footprint - www.myfootprint.org

Ecology's Sustainability Website www.ecy.wa.gov/sustainability

EPA Green Communities - a 5-step approach for communities to use in developing a community wide action agenda. <http://www.epa.gov/greenkit/index.htm>

Oregon Natural Step Network- sponsors training and workshops www.ortns.org

Sightline – fostering sustainable economy and way of life in the Pacific NW.
www.sightline.org

Sustainable Sonoma County www.sustainablesonoma.org/

What is Clark County Government doing?

- In October 2007 the Board of County Commissioners adopted a Sustainability Policy which establishes a sustainability advisory committee “to prepare an annual inventory of the county’s sustainability efforts, report on progress related to the stated policy goals, and recommend a biennial budget aimed at funding sustainable choices.”
- The Public Works Department is currently working to implement an Environmental Management System in all sections of the department. Currently, Equipment Services and Specialty Services have received ISO 14001 certification. The Public Works and General Services Departments are

aligning the EMS objectives with the Natural Step four system conditions to better evaluate whether Clark County is

- Moving in a sustainable direction towards a healthy environment, society, and economy. Environmental targets include:

Target (2006 baseline)	Program(s)
20% reduction in fuel usage by 2011.	Acquisition; Idling; Commute Trip Reduction
10% reduction in particulate matter (PM) emissions from diesel equipment by 2008	Acquisition; Exhaust After Treatment
20% reduction in energy use by 2008	Waste Oil Furnace; Lighting Retrofit;
100% compliance for Green List purchased products by 2008	Environmentally Responsible Purchasing; Hazardous Waste

- County policy P-250 Environmentally Responsible Purchasing helps purchasers select products based on environmental attributes.
- High-mileage, low-emission vehicles such as hybrids have been purchased for government operations.
- Incentives for county employees to participate in commute trip reduction programs.
- Renewable energy technologies have been installed in public facilities, such as solar panels at 78th Street Operations Center.
- 120,600 kWh per month of renewable power is purchased through Clark Public Utilities' Green Lights Program.
- Investments in energy efficiency have been made, such as the replacement of inefficient lighting with high output fluorescent lights, the replacement of traditional traffic lights with long-lasting light-emitting diodes (LEDs).
- The Public Service Center has met the sustainable building design and performance standards required for certification under the Leadership for Energy & Environmental Design (LEED) rating system.
- The Water Resources program oversees storm water capital improvements, water quality monitoring, public education and outreach, regulations and enforcement, and storm water maintenance.
- Clark County's Public Works Department has successfully removed fish barriers at several locations
- With state and federal grants, Vancouver-Clark Parks and Recreation Department and other partners are establishing native plants along several miles of the East Fork of the Lewis River and in the Vancouver Lake lowlands;
- Code Enforcement is working to continuously improve its Erosion Prevention and Control Program.
- The Legacy Lands Program (formerly known as Conservation Futures) since its inception in 1985 the program has protected over 4,000 acres of land highly valued for habitat, scenic corridors, low-impact recreation or other qualities that enhance the local environment.
- Approximately \$12 million has been acquired through Park Impact Fees and the Real Estate Excise Tax to help fund design and construction of new parks. A special parks district raised property taxes by 27 cents per \$1,000 assessed

value within the unincorporated urban area for maintenance and operations of new parks.

New initiatives proposed for 2009-2010 include:

- A farmland preservation program and a forest legacy program to ensure that some of the county's highest quality farm and forest lands may remain in farm and forest production in the face of increasing pressure to convert to other uses.
- Use of solar energy that will result in solar panels wherever feasible including the use of solar water heating techniques where building populations and water usage supports its use.
- Considering installing wind turbines at Camp Bonneville should the wind profile support it or entering into partnerships with third parties to create a "Clark County Wind Farm" in Eastern Washington to make the county carbon neutral.

Many of Clark County's individuals, businesses and local governments are actively involved in pursuing sustainability including the City of Vancouver's Green Ribbon Panel.



Recommendations

1. Be more proactive to enhance and expand waste reduction and toxic reduction programs.
2. Encourage green building including: construction debris and waste management requirements for reuse and recycling of materials from construction and demolition sites and Leadership in Energy and Environmental Design (LEED) for county buildings.
3. Calculate the County's ecological or carbon footprint and track progress towards meeting greenhouse gas emission goals.
4. Participate in climate protection programs.
5. Promote ISO 14001 or comparable sustainability systems approach within the County, other public agencies, and contracted garbage and recycling hauler(s), and transfer station operations.
6. Report annually on progress towards meeting sustainability goals including: recycling/diversion rates, environmentally responsible purchasing, and commute trip reduction efforts.
7. All Solid Waste policies and programs will foster a sustainable Clark County