

# Principles of Sustainability

Sustainability is a characteristic of a process or state that can be maintained at a certain level indefinitely. The term, in its environmental usage, refers to the potential longevity of vital human ecological support systems, such as the planet's climatic system, systems of agriculture, industry, forestry, and fisheries, and human communities in general and the various systems on which they depend.

In recent years an academic and public discourse has led to this use of the word sustainability in reference to how long human ecological systems can be expected to be usefully productive. Observers point out that in the past, complex human societies have died out, sometimes as a result of their own growth and associated impacts on ecological support systems. The implication is that modern industrial society, which continues to grow in scale and complexity, might also collapse.

The implied preference would be for systems to be productive indefinitely, or be sustainable.



**The United Nations**



**INTERNATIONAL SUSTAINABILITY COUNCIL**

## The Origins of the Principles of Sustainability

**The United Nations (UN)** Conference on Environment and Development, also known as the Rio Summit, Earth Summit was a major United Nations conference held in Rio de Janeiro from June 3 to June 14, 1992.

172 governments participated, with 108 sending their heads of state or government. Some 2,400 representatives of non-governmental organizations (NGOs) attended, with 17,000 people at the parallel NGO Forum, who had so-called Consultative Status.

An important achievement was an agreement on the Climate Change Convention which in turn led to the Kyoto Protocol. Another was agreement to "not carry out any activities on the lands of indigenous peoples that would cause environmental degradation or that would be culturally inappropriate".

The Convention on Biological Diversity was opened for signature at the Earth Summit, and made a start towards redefinition of money supply measures that did not inherently encourage destruction of natural eco-regions and economic growth considered not to be sustainable.

The Earth Summit resulted in the following documents:

- Rio Declaration on Environment and Development
- Agenda 21
- Convention on Biological Diversity
- Forest Principles
- Framework Convention on Climate Change

**The Millennium Ecosystem Assessment (MA)** is a research program that focuses on ecosystem changes over the course of decades, and projecting those changes into the future. It was launched in 2001 with support from the United Nations by the UN Secretary-General Kofi Annan.

The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems.

**The International Sustainability Council (ISC)** Principles for Sustainability were created in 2007 as a representative collection of these efforts.

# Principle 1

## Interdependence, participation, providing information, and improving science

We all need to recognize our economic, ecological and social interdependence on a global scale and understand and respect differing economic and social views, values, traditions and aspirations. We are all caretakers of the economy, the environment, and social well-being for the benefit of present and future generations. Today's decisions must be balanced with tomorrow's effects. A participatory process on all scales of decision making is vital to community sustainability. Such a process engages all the people who have a stake in the outcome of the decision being contemplated. It encourages the identification of concerns and issues, promotes the wide generation of ideas for dealing with those concerns, and helps those involved find a way to reach agreement about solutions.

### PRINCIPLES

- 1. Interdependence**  
Interdependence is a dynamic of being mutually responsible to and sharing a common set of principles with others. This concept differs distinctly from "dependence" in that an interdependent relationship implies that all participants are emotionally, economically, and/or morally interdependent. A vision of sustainability does not focus solely on environmental issues. More broadly, issues of sustainability encompass economic, environmental, social and human needs. Within this vision also include solutions that are long lasting, supportive of research, and involvement by all.
- 2. Individuals must recognize the impact they have on a global level**  
Individuals should cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, individuals have common but differentiated responsibilities. The responsibility that we bear in the pursuit of sustainability in view of the pressures we place on the global environment, and of the technologies and financial resources we all command must be acknowledged.
- 3. Natural resources should be protected for those that cannot do so themselves.**  
The environment and natural resources of people under oppression, domination and occupation should be protected.
- 4. Facilitation, refinement and access to information**  
We should encourage and facilitate the improvement and refinement of information, and promote the opportunity for equal and timely access to information by all. This results in the production and dissemination of important, relevant information, fosters a sense of community, produces ideas that may not have been considered otherwise, and engenders a sense of ownership on the part of the community for the final decision.
- 5. Improving scientific and technological knowledge by innovation**  
Individuals should cooperate to strengthen sustainable development by improving scientific

# Principle 1

## Interdependence, participation, providing information, and improving science

understandings through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

### 6. **Public awareness, and participation on issues**

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. Facilitation and encouragement of public awareness and participation should be accomplished by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

### 7. **The precautionary approach**

In order to protect the environment, the precautionary approach shall be widely applied. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

# Principle 2

## Provide intergenerational equity and durability

The economy, environment, and social well-being should be managed for the equal benefit of present and future generations. A sustainable community does not deplete its resources, destroy natural systems, or pass along unnecessary hazards to future generations. We should incorporate disaster resilience and mitigation into our decisions and actions. A community is resilient in the face of inevitable natural disasters like tornadoes, hurricanes, earthquakes, floods, and drought if it takes steps to ensure that such events cause as little damage as possible, that productivity is only minimally interrupted, and that quality of life remains at (or quickly returns to) high levels. A disaster-resilient community further takes responsibility for the risks it faces and, to the extent possible, is self-reliant. That is, it does not anticipate that outside entities (such as federal or state government) can or will mitigate its hazards or pay for its disasters.

### PRINCIPLES

- 1. Development should be equitable for both present and future generations**  
The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.
- 2. Individuals should discourage transference of activities that cause degradation**  
Individuals should discourage or prevent the relocation and transfer of any activity and substance that causes severe environmental degradation or are found to be harmful to human health.
- 3. Reduce and eliminate unsustainable patterns of production and consumption**  
To achieve the goals associated with sustainability and achieve a higher quality of life for all people, individuals should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.
- 4. Notification about natural disasters and emergencies is necessary**  
Notification of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment is imperative. Every effort shall be made to help those afflicted.
- 5. Provide a buffer between development and natural systems**  
Communities or cluster of communities should have a well-defined edge, such as agricultural greenbelts or wildlife corridors, permanently protected from development.
- 6. Drought resistance**  
Ground water treatment and brackish water desalination should be pursued when necessary to maximize locally available, drought-proof water supplies. Landscaping with native plants requires an understanding of the evolutionary adaptations plants make to specific light and soil moisture conditions but are essential to providing for a drought-resistant community.

# Principle 3

## Support and improve the rules of governance

Growth management planning, community design, green building practices and environmental mitigation all play a role in maintaining the quality of life while accommodating growth through sustainable development strategies. It is imperative that our societies develop an informed democracy. The practice of publishing reports on the state of the environment, and of indicators of environment and social quality, used effectively by the proponents of sustainability should allow citizens to view the risks and threats to their lifestyle and to demand political honesty and accountability. Good decision making by government is imperative on all four scales: global, national, regional, and local.

### PRINCIPLES

- 1. An Informed Democracy**  
Poor or absent decision making is at the heart of the failure of governments worldwide to initiate significant change towards sustainability. In situations of high or growing population and accompanying destruction of environmental resources, there is a heightened government responsibility to both the population and the environment. Although competitive nature of democratic government can impede consensus on the urgency of sustainability problems, judgment at the polls generally means that it is possible to achieve some level of political accountability.
- 2. Government accountability**  
Government accountability ultimately depends upon informed public opinion regarding environmental risks, and on moving human development assessment beyond the economic bottom line as the primary determining factor.
- 3. Good environmental standards, policies and management objectives are vital**  
Effective environmental legislation should be promoted. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied that are inappropriate and of unwarranted economic and social cost should be changed.
- 4. Cooperation to develop good environmental law should be embraced**  
Cooperation in an expeditious and more determined manner to develop laws regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction should be embraced.
- 5. Governments should take a proactive rather than reactive role**  
Rather than allowing developer-initiated, piecemeal development, governments should take charge of planning processes. General plans should designate where new growth, infill or redevelopment will be allowed to occur.

# Principle 3

Support and improve the rules of governance

6. **Warfare is inherently destructive to the environment.**  
Nations shall respect international law providing protection for the environment in times of armed conflict, and cooperate in its further development, as necessary.

# Principle 4

## Maintain and, if possible, enhance the quality of society through community building

A sustainable society is one that persists and thrives. It provides a high quality of life for all of its inhabitants without harming the integrity and productivity of the natural systems and resources upon which all life depends. Humans' needs and desires are met within the limits of what nature can provide.

Choices on design, particularly at medium and high density, greatly affect energy use and natural materials consumption. Public transport and road investment, and decisions that affect an individual's car ownership choices are important when talking about improving the quality of society through community building.

### PRINCIPLES

**1. A focus on building sustainable communities.**

Communities should be the primary locus of responsibility for creating a sustainable society. This is because most of the individual behaviors and governmental policies that support sustainability are best nurtured at the local level. The human species has an innate inclination to care about our neighbors and our community, and the beauty of the natural environment in the place which we happen to call home.

**2. The value of diversity**

A sustainable society values diversity because it provides strength and resilience to the human community, just as it does in nature. A sustainable society resolves the inherent conflicts among its members through peaceful, respectful and non-violent means.

**3. Open space**

The community should contain an ample supply of specialized open space in the form of squares, greens and parks whose frequent use is encouraged through placement and design.

**4. Infrastructure**

Infrastructure can be defined as the basic facilities, services, and installations needed for the functioning of a community or society. Sustainable infrastructure systems deal with energy systems, water and wastewater, stormwater management, and solid waste management. Though the solutions for each sector differ, all grew out of creative thinking, a team approach to problem-solving, and a belief in more efficient, productive use of resources.

**5. Wired Communities**

Communities should use and invest in technology that supports the ability of local enterprises to succeed, improves civic life, and provides open access to information and resources. Coupled with the development of online educational content and access to useful information online (like job opportunities, childcare, health and benefits information) progress can be made in wired communities.

# Principle 4

Maintain and, if possible, enhance the quality of society through community building

**6. Employment Opportunities**

The ability to find work, be provided with healthy work and stay healthy is significantly shaped by socio-economic status. Employment is one of the most strongly evidenced determinants of health. People's employment status and the nature of their work have a direct bearing on their physical and mental health and even their life expectancy. This is related to income, a sense of making a valuable contribution and increased social networks gained through work.

**7. Provide life-long skills by investing in educational institutions**

Because human resources are so valuable in the information age, communities should provide life-long skills and learning opportunities by investing in excellent schools, post-secondary institutions, and opportunities for continuous education and training available to all.

**8. Regional institutions and services**

Regional institutions and services (government, stadiums, museums, etc.) should be located in the urban core.

**9. Sustainable construction methods and materials**

Materials and methods of construction should be specific to the region, exhibiting a continuity of history and culture and compatibility with the climate to encourage the development of local character and community identity.

**10. Integration of transit systems**

The location and character of the community should be consistent with a larger transit network. The regional land-use planning structure should be integrated within a larger transportation network built around transit rather than freeways.

**11. Vehicles, and transportation systems**

Measures to minimize the impact that vehicles, the manufacturing of vehicles, the construction of roads, and production of cement have on the environment. Most cities are dependent upon global transportation systems. Particulates and other pollutants from the burning of fossil fuels and biomass are transported long distances. Global air chemistry is thus affected by local air pollution. Further, humans suffer health effects due to air pollution from distant sources.

**12. Streets, pedestrian and bike paths**

Streets, pedestrian paths and bike paths should contribute to a system of fully-connected and interesting routes to all destinations. Their design should encourage pedestrian and bicycle use by being small and spatially defined by buildings, trees and lighting; and by discouraging high speed traffic.

# Principle 5

Maintain and, if possible, enhance the quality of human life

Quality of life—or “livability”—differs from community to community. It has many components: income, education, health care, housing, employment, legal rights on the one hand; exposure to crime, pollution, disease, disaster, and other risks on the other. One town may be proud of its safe streets, high quality schools, and rural atmosphere, while another thinks that job opportunities and its historical heritage is what makes it an attractive place to live. Each locality must define and plan for the quality of life it wants and believes it can achieve, for now and for future generations. A sustainable community’s resources and opportunities are available to everyone, regardless of ethnicity, age, gender, cultural background, religion, or other characteristics.

## PRINCIPLES

- 1. Humans have the right to live productively**  
Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
- 2. Participation by indigenous people should be supported**  
Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. Recognition and support of their identity, culture and interests and enable their effective participation in the achievement of sustainable development is essential.
- 3. Minority peoples are vital to the solution**  
Minorities have a vital role to play in all aspects of sustainability. Their full participation is therefore essential.
- 4. Eradicating poverty is an indispensable requirement**  
All people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.
- 5. Today’s youth should be mobilized to ensure a better future for us all**  
The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.
- 6. The basic necessities of life must be provided to all.**  
Physical and biological needs that are required by humans to sustain life; food, water, oxygen, bowel & bladder elimination, sleep and protection from extreme temperatures must be provided first and foremost.
- 7. Human health**  
Human health relates to all matters of physical, mental, and social wellbeing, and not merely the absence of disease or infirmity. The main concern with sustainability in health is

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## Maintain and, if possible, enhance the quality of human life

the ever-increasing resource demand. It can be argued that this demand for health services is one of the principle drivers for rapid and non-sustainable economic activity. The maintenance and improvement of health should be at the center of concerns regarding the environment and development.

### 8. **Mobility**

The human need of mobility of people, raw materials, manufactured goods, food, water, and wastes must be met with minimal impact to natural resources. In much of the world the transportation system is dependent upon the burning of a form of fossil fuel, which directly and powerfully connects the human need for transportation with the environmental impacts transportation creates.

### 9. **Safety needs**

Human safety needs include feeling protected from harm and free of anxiety. Security and safety measures, such as those for anti-terrorism and force protection, must be considered within a total project context, including impacts on occupants and the environment, regardless of the level of protection deemed appropriate.

### 10. **Needs of love, affection and belongingness**

The human need of feeling closeness, love, and affection is integral part of an individual's well being and therefore is vital to providing for a lasting model of sustainability. The need for love and belonging is met when friends are made, acceptance by others is received and a person is able to give and receive affection.

### 11. **The human desire for self-esteem**

Individuals have an innate need to feel valuable and worthwhile. We all have a need for a stable, firmly based, high level of self-respect, and respect from others. When these needs are satisfied, the person feels self-confident and valuable as a person in the world. Only when individuals satisfy this need do they become valuable participants in sustainability.

### 12. **The human desire of self-actualization**

Learning, understanding and creativity are involved in meeting a person's potential. Goal setting, developing talents and skills are necessary to developing an individual's personal lifestyle.

# Principle 6

## Maintain and, if possible, enhance economic vitality

A viable local economy is essential to sustainability. This includes job opportunities, sufficient tax base and revenue to support government and the provision of infrastructure and services, and a suitable business climate. A sustainable economy is also diversified, so that it is not easily disrupted by internal or external events or disasters, and such an economy does not simply shift the costs of maintaining its good health onto other regions or onto the oceans or atmosphere. Nor is a sustainable local economy reliant on unlimited population growth, high consumption, or nonrenewable resources.

### PRINCIPLES

**1. Land owners have the right to use resources**

Land owners have the right to exploit their own resources pursuant to their own environmental and developmental policies, federal, state and local laws, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other areas beyond their limits of jurisdiction.

**2. Economic growth is essential**

Cooperation to promote a supportive and open economic system that would lead to economic growth and sustainable development to better address the problems of environmental degradation is essential. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on trade.. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

**3. An integrated approach**

Government, business, education, and the community should work together to create a vibrant local economy, through a long-term investment strategy that encourages local enterprise, serves the needs of local residents, workers, and businesses, promotes stable employment and revenues by building on local competitive advantages, protects the natural environment, increases social equity and is capable of succeeding in the global marketplace.

**4. Vision and Inclusion**

Communities and regions need a vision and strategy for economic development. Visioning, planning and implementation efforts should continually involve all sectors, including the voluntary civic sector and those traditionally left out of the public planning process.

**5. Poverty Reduction**

Both local and regional economic development efforts should be targeted to reducing poverty, by promoting jobs that match the skills of existing residents, improving the skills of low-income individuals, addressing the needs of families moving off welfare, and insuring the availability in all communities of quality affordable child care, transportation, and housing.

# Principle 6

Maintain and, if possible, enhance economic vitality

**6. Local Focus**

Because each community's most valuable assets are the ones they already have, and existing businesses are already contributing to their home communities, economic development efforts should give first priority to supporting existing enterprises as the best source of business expansion and local job growth. Luring businesses away from neighboring communities is a zero-sum game that doesn't create new wealth in the regional economy. Community economic development should focus instead on promoting local entrepreneurship to build locally based industries and businesses that can succeed among national and international competitors.

**7. Industry Clusters**

Communities and regions should identify specific gaps and niches their economies can fill, and promote a diversified range of specialized industry clusters drawing on local advantages to serve local and international markets.

**8. Long-Term Investment**

Publicly supported economic development programs, investments, and subsidies should be evaluated on their long-term benefits and impacts on the whole community, not on short-term job or revenue increases. Public investments and subsidies should be equitable and targeted, support environmental and social goals, and prioritize infrastructure and supportive services that promote the vitality of all local enterprises, instead of individual firms.

**9. Corporate Responsibility**

Enterprises should work as civic partners, contributing to the communities and regions where they operate, protecting the natural environment, and providing workers with good pay, benefits, opportunities for upward mobility, and a healthful work environment.

**10. Compact Development**

To minimize economic, social, and environmental costs and efficiently use resources and infrastructure, new development should take place in existing urban, suburban, and rural areas before using more agricultural land or open space. Local and regional plans and policies should contain these physical and economic development planning principles to focus development activities in desired existing areas.

**11. Livable Communities**

To protect the natural environment and increase quality of life, neighborhoods, communities and regions should have compact, multi-dimensional land use patterns that ensure a mix of uses, minimize the impact of cars, and promote walking, bicycling, and transit access to employment, education, recreation, entertainment, shopping, and services. Economic development and transportation investments should reinforce these land use

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patterns, and the ability to move people and goods by non-automobile alternatives wherever possible.

### 12. **Center Focus**

Communities should have an appropriately scaled and economically healthy center focus. At the community level, a wide range of commercial, residential, cultural, civic, and recreational uses should be located in the town center or downtown. At the neighborhood level, neighborhood centers should contain local businesses that serve the daily needs of nearby residents. At the regional level, regional facilities should be located in urban centers that are accessible by transit throughout the metropolitan area.

### 13. **Distinctive Communities**

Having a distinctive identity will help communities create a quality of life that is attractive for business retention and future residents and private investment. Community economic development efforts should help to create and preserve each community's sense of uniqueness, attractiveness, history, and cultural and social diversity, and include public gathering places and a strong local sense of place.

### 14. **Regional Collaboration**

Since industries, transportation, land uses, natural resources, and other key elements of a healthy economy are regional in scope, communities and the private sector should cooperate to create regional structures that promote a coherent metropolitan whole that respects local character and identity.

# Principle 7

## Maintain and, if possible, enhance the quality of the environment

A sustainable community sees itself as existing within a physical environment and natural ecosystem and tries to find ways to co-exist with that environment. It does its part by avoiding unnecessary degradation of the air, oceans, fresh water, and other natural systems. It tries to replace detrimental practices with those that allow ecosystems to continuously renew themselves. In some cases, this means simply protecting what is already there by finding ways to redirect human activities and development into less sensitive areas. But a community may need to take action to reclaim, restore, or rehabilitate an already-damaged ecosystem such as a nearby wetland.

### PRINCIPLES

- 1. Environmental protection is an integral part of development**  
In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.
- 2. Environmental impact assessments are essential**  
Environmental impact assessments, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.
- 3. Provide timely information and assistance for environmental issues**  
Land owners shall provide prior and timely notification and relevant information to others potentially affected on activities that may have a significant adverse transboundary environmental effect, and shall consult with them at an early stage and in good faith.
- 4. Places that are environmentally vulnerable shall be given priority**  
The special situation and needs of places most environmentally vulnerable, shall be given special priority. Actions in the field of environment and development should also address the interests and needs of all.
- 5. Environmental disputes should be resolved peacefully**  
Resolution for all environmental disputes should be done peacefully, and by appropriate means.
- 6. Authorities should promote internalization of environmental costs**  
Authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.
- 7. Appropriate food sources, clean water and space to live are critical to natural systems**  
An animal's habitat includes food, water, shelter and space in an arrangement appropriate to the animal's needs is imperative for sustainable design. If any of the components of

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habitat is missing or is affected significantly so that the arrangement for the individual animal or population of animals is no longer suitable, there will be an impact. The impact will not necessarily be catastrophic, but can be. Native plants provide a valuable source of food for wildlife.

### 8. **Considerations for wildlife**

There are a great many additional limiting factors beyond those of suitable food, water, shelter and space. For example, disease, predation, pollution, accidents and climatic conditions are among other factors which can have impact. All things are interrelated. When we look at a biological community, we find interrelationships and interdependencies between plants and plants, plants and animals, as well as animals and animals. These interrelationships and interdependencies are important.

### 9. **Habitat and Natural Resource Areas**

Natural resources such as wetlands, flood plains, recharge zones, riparian areas, open space, and native habitats should be identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat, and overall long-term water resource sustainability.

### 10. **Corridors for wildlife**

Regions should be bounded by and provide a continuous system of greenbelt/wildlife corridors to be determined by natural conditions.

### 11. **Catchment areas**

Water holding areas such as creek beds, recessed athletic fields, ponds, cisterns, and other features that serve to recharge groundwater, reduce runoff, improve water quality and decrease flooding should be incorporated into the urban landscape.

### 12. **Landscape**

All aspects of landscaping from the selection of plants to soil preparation and the installation of irrigation systems should be designed to reduce water demand, retain runoff, decrease flooding, and recharge groundwater. Communities should provide for the efficient use of water through the use of natural drainage, drought tolerant landscaping and recycling. Wherever possible, the natural terrain, drainage and vegetation of the community should be preserved with superior examples contained within parks or greenbelts.

### 13. **Permeable Surfaces**

Permeable surfaces should be used for hardscape. Impervious surfaces such as driveways, streets, and parking lots should be minimized so that land is available to absorb storm water, reduce polluted urban runoff, recharge groundwater and reduce flooding.

### 14. **Recycled water**

Community design should maximize the use of recycled water for appropriate applications

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## Maintain and, if possible, enhance the quality of the environment

including outdoor irrigation, toilet flushing, and commercial and industrial processes. Purple pipe should be installed in all new construction and remodeled buildings in anticipation of the future availability of recycled water. Dual plumbing that allows graywater from showers, sinks and washers to be reused for landscape irrigation should be included in the infrastructure of new development.

### 15. **Conserving natural resources**

Conservation of natural resources is the wise use of the earth's resources by humanity and refers to the management of such valuable natural resources as timber, fish, game, topsoil, pastureland, and minerals, and also to the preservation of forests, wildlife, parkland, wilderness, and watershed areas. Urban water conservation technologies such as low-flow toilets, efficient clothes washers, and more efficient water-using industrial equipment should be incorporated in all new construction and retrofitted in remodeled buildings.

### 16. **Energy management and efficiency**

Energy efficiency has proved to be a cost-effective strategy for building economies without necessarily growing energy consumption. Making homes, vehicles, and businesses more energy efficient is seen as a largely untapped solution to addressing global warming and energy security. The street orientation, the placement of buildings and the use of shading should contribute to the energy efficiency of the community.

### 17. **Use an Integrated Pest Management Approach**

Integrated Pest Management is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment, takes advantage of all appropriate pest management options including, but not limited to, the judicious use of pesticides.

### 18. **Nutrient Management**

Science-based best management practices (BMPs) should be used to ensure fertilizer is applied at the right rate, right time and right place. BMPs should be designed to ensure plants get the nutrients they need while minimizing nutrient losses to the environment.