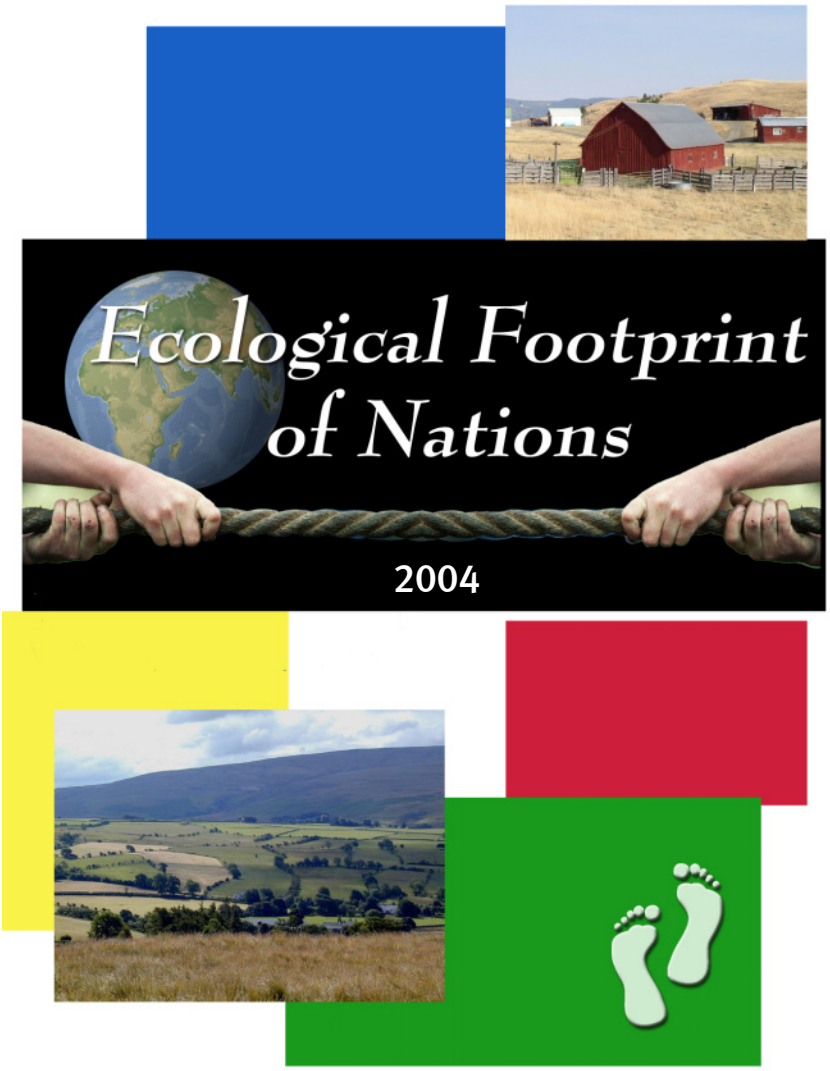

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Sustainability Indicators Program
March 2004

REDEFINING PROGRESS
For People, Nature, and the Economy

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TABLE OF CONTENTS

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OVERVIEW

In the *Living Planet Reports 2000* and *2002*, WWF International and Redefining Progress documented that humanity's **Ecological Footprint** has breached the limits of environmental sustainability. The Ecological Footprint revealed that nature has been utilized beyond its capacity to renew and regenerate indefinitely, as observers have seen with the decline of most of the world's major marine fisheries and the steady depletion of fossil fuels.

Ecological Footprint analyses provide an important reminder of the implications of resource use at the global level and the differences between countries around the globe. The Ecological Footprint can also help tell important stories at the local, national, and international levels, providing support for policies that make cities and regions more sustainable.

The update of the National Ecological Footprints Accounts, presented in this report, indicates that the situation has remained fundamentally unchanged except for one notable exception in the case of the United States. In 2000, the most recent year for which data are available, the US became the country with the largest per capita Ecological Footprint on the planet. Changes in the Footprint between 1999 and 2000 in Western European countries are featured, as are the disparities between regions and income groups. The findings reveal stark distributive implications, highlighting the serious environmental justice and equity issues that remain global and intergenerational in scope.

In turning from the global problem to local solutions, this report also features the path through which one municipality, situated in what might be considered one of the most unsustainable places on the planet, has attempted to change its Ecological Footprint. Located in the county of Los Angeles, California, the City of Santa Monica's ambitious **Sustainable City Program** provides a concrete example of how progress toward sustainability can be made, measured, and advanced using the Ecological Footprint methodology.

Farther north, in the San Francisco Bay Area, a similar process is beginning to unfold. With a population over six million, the region's size makes the task daunting. However, a majority of the region's residents favor sustainability, and regional agendas increasingly emphasize the need to achieve greater sustainability. A preliminary look at the Bay Area region's Footprint is presented, with the full results scheduled to be released on March 30, 2004.

*The City of Santa Monica's ambitious **Sustainable City Program** provides a concrete example of how progress toward sustainability can be made, measured, and advanced using the Ecological Footprint methodology.*

The municipality of Almada, in Portugal, has also found the Ecological Footprint concept useful for communicating issues of sustainability to its citizens.

Ecological Footprint analyses provide an important reminder of the implications of resource use at the global level and the differences between countries around the globe. The Ecological Footprint can also help tell important stories at the local, national, and international levels, providing support for policies that make cities and regions more sustainable.

ACKNOWLEDGEMENTS

Primary authors and analysts: Dr. Jason Venetoulis, Dahlia Chazan, and Christopher Gaudet; Redefining Progress.

Acknowledgements: Many thanks to Dean Kubani, Santa Monica's Sustainable City Program, and the City of Santa Monica for the inspiration, funding, and outstanding assistance in data collection for Santa Monica's Footprint. Likewise, heartfelt thanks go to Peter Melhus and the rest of the steering committee and members of the Bay Area Alliance for Sustainable Communities. And, thanks to Christina Maynard for design assistance.

The findings in this report are based upon the most recent Ecological Footprint Accounting methodology created in February 2003 at Redefining Progress. The Ecological Footprint concept was initially developed by William Rees and Mathis Wackernagel in the mid-1990s. The Ecological Footprint Accounts were expanded and refined at Redefining Progress in the late 1990s and subsequent years.

Redefining Progress (RP) is a non-profit organization that works with a broad array of partners to shift the economy and public policy toward sustainability. RP measures the real state of our economy, of our environment, and of social justice with tools like the Genuine Progress Indicator and the Ecological Footprint. We design policies—like environmental tax reform—to shift behavior in these three domains towards sustainability. We promote and create new frameworks—like common assets—to replace the ones that are taking us away from long-term social, economic, and environmental justice.

ECOLOGICAL FOOTPRINTS OF NATIONS

This section of the report provides an introduction to the conceptual basis of the Ecological Footprint™ Index (Ecological Footprint, or Footprint, hereafter) and summarizes the major findings of the National Ecological Footprint Accounts in 2000, the most recent year for which data are available. The key findings of the National Footprint Accounts at the turn of the Millennium were that:

The Ecological Footprint is a tool for measuring and analyzing human natural resource consumption and waste output within the context of nature's renewable and regenerative capacity (or biocapacity).

- Humanity's total Ecological Footprint increased to **13.2 billion global hectares, growing by 147 million global hectares between 1999 and 2000**;
- The per capita global Ecological Footprint continued its twenty year decline; and
- The United States became the nation with the **largest per capita Ecological Footprint** on the planet.

WHAT IS AN ECOLOGICAL FOOTPRINT?

The Ecological Footprint is a tool for measuring and analyzing human natural resource consumption and waste output within the context of nature's renewable and regenerative capacity (or biocapacity). It represents a quantitative assessment of the biologically productive area (the amount of nature) required to produce the resources (food, energy, and materials) and to absorb the wastes of an individual, city, region, or country.

Footprints are not bad or good *per se*. Every living entity possesses an Ecological Footprint; it is the size that differs. On a global scale, humanity's entire Ecological Footprint can be compared to the total available natural capital and services. When humanity's Footprint is within the annual regenerative capabilities of nature, its Footprint is sustainable. For some it may be surprising to learn that the Footprint (i.e. a measure of human consumption) can *exceed* the planet's ecological limits, but only for a limited time, by using resources more quickly than they can be renewed.

From the Footprint perspective, sustainability requires living within the regenerative and absorptive capacity of the planet. The corollary in the biological sciences is typically referred to as a "sustainable yield." If we remove more from nature than can be provided indefinitely, we are on an unsustainable track. The liquidation of our ecological assets is called "overshoot" and is not sustainable. In this situation, the Earth's natural capital is drawn down and nature's absorptive sinks are swamped. This leaves less nature for future generations.

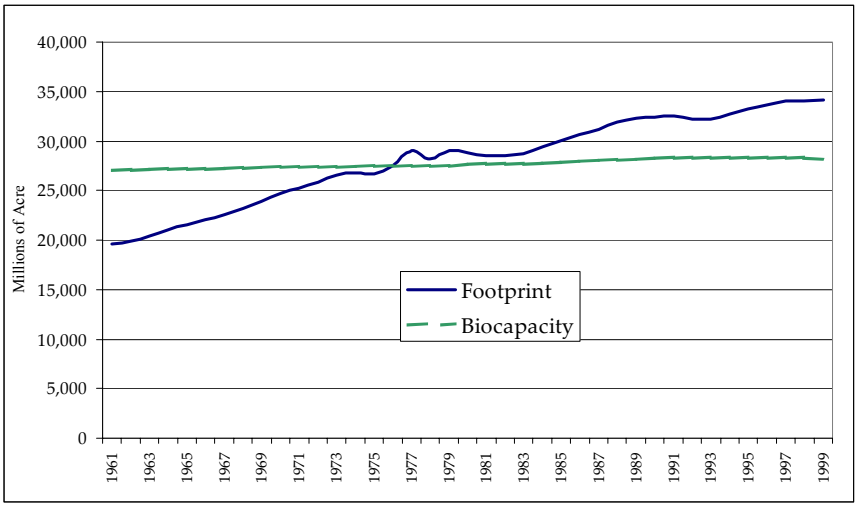
In the *Living Planet Reports 2000* and *2002*, providing Footprint results for the years 1997 and 1999 respectively, WWF International and Redefining Progress reported that in the late 1970s humanity's collective Ecological Footprint breached the sustainability mark for the first time, and has remained unsustainable ever since (Loh et al., 2000 and 2002). By the year 2000, the ecological deficit reached nearly 1 acre per person, or 9 million square miles (23 million square kilometers) (Illustration 1).

From the Footprint perspective, sustainability requires living within the regenerative and absorptive capacity of the planet.

Admittedly, the Ecological Footprint methodology does not capture all of

ILLUSTRATION 1:

HUMANITY'S TOTAL FOOTPRINT 1961-2000



Footprinting offers one of the most comprehensive assessment techniques that can help inform, educate, and point the way toward a more sustainable path.

humanity's impacts on the environment. Toxic pollutants and species extinction, for example, are not incorporated into the Footprint model. Moreover, the "value" of nature extends far beyond the goods and services that humans take from it. Footprinting does, however, offer one of the most comprehensive assessment techniques that can help inform, educate, and point the way toward a more sustainable path.

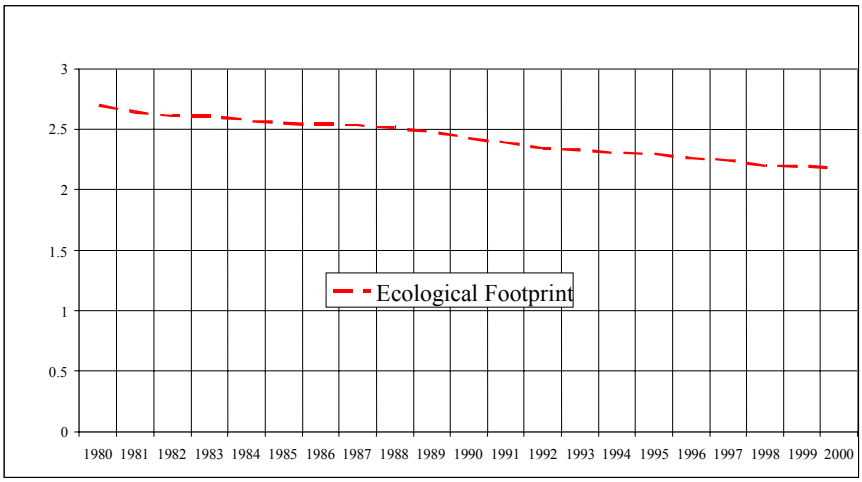
THE RESULTS OF THE FOOTPRINT OF NATIONS: SEARCHING FOR BIGFOOT

As Illustration 1 indicates, between 1960 and 2000 the combined Ecological Footprint of Nations steadily increased to what appears to be an unsustainable level in the 1970s. Much of this growth has been due to the increase in human population and the concomitant demands on natural resources. On a per capita basis, however, the average Footprint in the world has declined, as many areas of production have become more efficient. From 1980 to 2000, the global per capita Footprint declined by about one half hectare per person (Illustration 2).

Are unsustainable and growing global Footprints a function of increasing consumption, population, or some other variables? The above findings indirectly point to a pre-existing controversy in the sustainability field.

ILLUSTRATION 2:

GLOBAL PER CAPITA FOOTPRINT 1980-2000 (gha/person)



Conversion: 2.471 acres/ha

To help tease out what is going on, in the following pages we will examine separately what are often considered two of the primary factors driving unsustainability: consumption and population. We will also examine the role of economic income and regional variations in the make-up and size of a Footprint.

FOOTPRINTS IN REGIONS AROUND THE GLOBE

The link between unsustainable consumption and higher income levels is evident upon examination of Footprints in each region of the globe. As depicted in Illustration 3 (on page 9), Western Europe and particularly North America, have the highest per capita Footprints of any region on Earth. **At 9.57 hectares (23.6 acres) per person, the United States has the largest per capita Ecological Footprint on the planet.**

In Western Europe, the overall change among countries between 1999 and 2000 was larger than the U.S., with some countries witnessing increases in their Ecological Footprint as others declined. Norway and Italy, the European countries with the largest and smallest per capita Ecological Footprints, respectively, both had larger Footprints in 2000.

In contrast, the Netherlands' per capita Ecological Footprint, already smaller than the Western European average, decreased by 2.5% in 2000. In part, this may be due to the Netherlands' efforts to secure commitments to social and environmental responsibility from the financial sector measures to control consumption, and a commitment to protect open spaces and biological diversity. Table 1 (on page 9) shows the regional differences in Western Europe.

Despite the high *per capita* Ecological Footprints of the United States and Western Europe, Illustration 4 shows that, due to the population differences between regions, *aggregated* regional Footprints are quite different.

In this respect, the Asia-Pacific region, home to 3.5 billion or nearly 60% of the global population, can be viewed as the place with the largest Footprint. Africa, on the other hand, has a population that is nearly 480 million larger than the U.S, and yet the continent's total Footprint is 1.6 billion hectares smaller.

One implication of this analysis is that consumption (or the impacts associated with consumption and waste output) in higher-income/consumption countries will have to be reduced in order to move toward a sustainable global Footprint. However, while the responsibility may fall most heavily on wealthier nations, the burden does not rest with these countries alone.

Even if North America and Western Europe succeed in reducing the size of their Footprints, the possibility of more populous regions increasing their per capita Footprint and/or population could swamp any gains. Population stabilization and the development of lower-impact technologies can therefore contribute to a smaller global Footprint.

TABLE 1: Conversion: 2.471 acres/ha

CHANGES IN WESTERN EUROPEAN FOOTPRINTS

Ranked for highest decline to largest increase in Footprint (gha/capita)

	1999 Footprint	2000 Footprint	Real Change	Percentage Change
Denmark	5.71	5.32	-0.39	-6.82%
Netherlands	3.91	3.81	-0.10	-2.45%
Austria	4.97	4.87	-0.09	-1.91%
United Kingdom	4.80	4.72	-0.08	-1.60%
Finland	7.06	7.00	-0.06	-0.82%
Germany	4.28	4.26	-0.02	-0.55%
Greece	4.78	4.78	0.00	0.02%
Norway	8.16	8.17	0.01	0.11%
Italy	3.24	3.26	0.02	0.65%
France	5.68	5.74	0.05	0.93%
Western Europe	5.29	5.34	0.05	1.01%
Ireland	4.90	4.97	0.07	1.44%
Switzerland	5.11	5.26	0.14	2.80%
Spain	4.75	4.90	0.15	3.19%
Portugal	5.18	5.34	0.16	3.04%
Belgium & Luxembourg	4.80	5.11	0.31	6.39%
Sweden	7.27	7.95	0.68	9.37%

ILLUSTRATION 3:

PER CAPITA FOOTPRINTS BY REGION 1999-2000

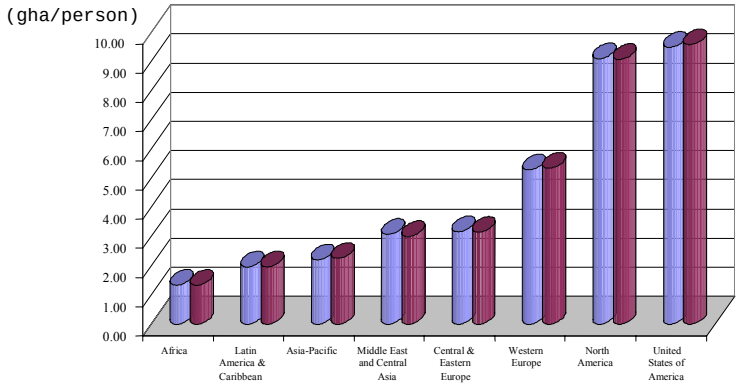
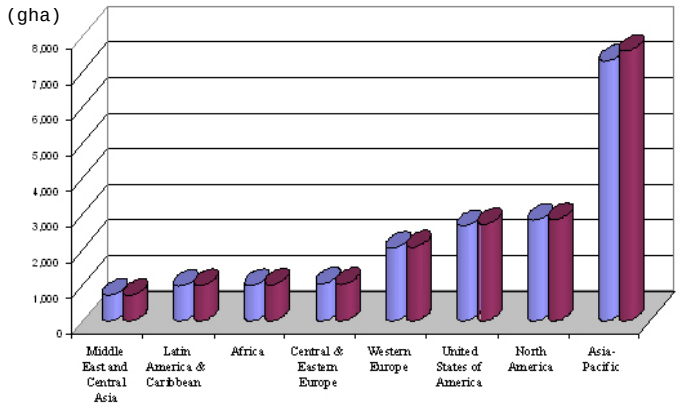


ILLUSTRATION 4:

TOTAL FOOTPRINT BY REGION 1999-2000



FOOTPRINT MIX: VARIATIONS BY INCOME GROUP

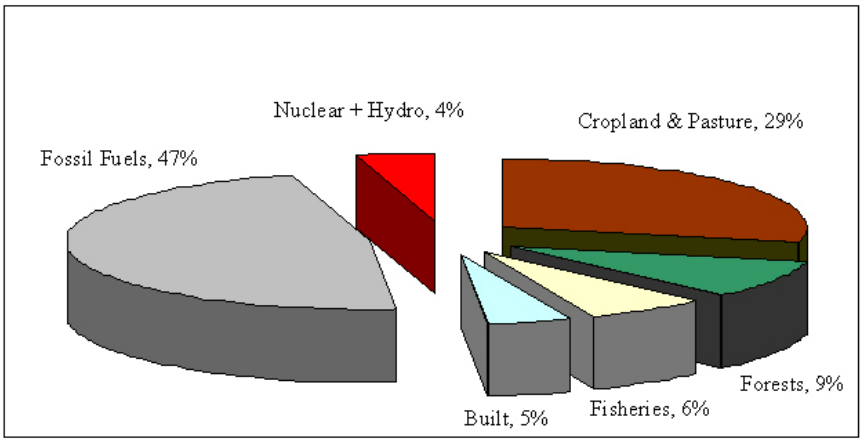
This section provides information on the sources of Footprint factors in higher, middle, and lower income countries.

The biggest portion of the global Ecological Footprint is from the burning of fossil fuels.

The factors contributing to a country's or region's Ecological Footprint vary in a number of ways. The biggest portion of the global Ecological Footprint is from the burning of fossil fuels. Fossil fuel consumption is followed by the utilization of cropland and pasture land (Illustration 5). The very high levels of coal, oil, and natural gas consumption in the wealthier regions of the world heavily influence this global pattern. In contrast, nearly half of the Footprint in lower income countries is attributable to the utilization of cropland (Illustration 6).

ILLUSTRATION 5:

GLOBAL FOOTPRINT SOURCES



Is there a correlation between Ecological Footprints and economic income/consumption? In looking at countries in 2000, the answer seems to be yes.[1] This is not surprising given that GDP and energy use tend to be highly correlated, and globally Footprints are dominated by the consumption of fossil fuel.

Table 2 (on page 12) shows the Footprints of nations as they relate to the global average per capita Footprint. At present population levels, the global Ecological Footprint is estimated to be above the amount of renewable biocapacity on the planet.

In policy terms, this analysis suggests two directions. First, international cooperation in many areas is clearly important in addressing the distribution inequalities in global Footprints. Second, local efforts are necessary to reduce resource use on a smaller geographic scale.

It is informative to examine places where policy and social changes have been undertaken at this scale. In the next section of this report we turn to the City of Santa Monica to see how a progressive municipality's efforts have affected their Ecological Footprint.

[1] A strong correlation was found between per capita Gross Domestic Product and per capita Ecological Footprints for 134 countries in 2000. A bivariate regression on per capita Footprints and GDP resulted in a 0.14 adjusted R-square at a 0.01 significance level. Both findings suggest a positive relationship between economic activity measured by GDP and Footprints.

In policy terms, this analysis seems to suggest two directions. First, international cooperation in many areas is clearly important in addressing the distribution inequalities in global Footprints. Second, local efforts are necessary to reduce resource use on a smaller geographic scale.

ILLUSTRATION 6:

LOWER INCOME COUNTRIES SOURCES OF FOOTPRINT

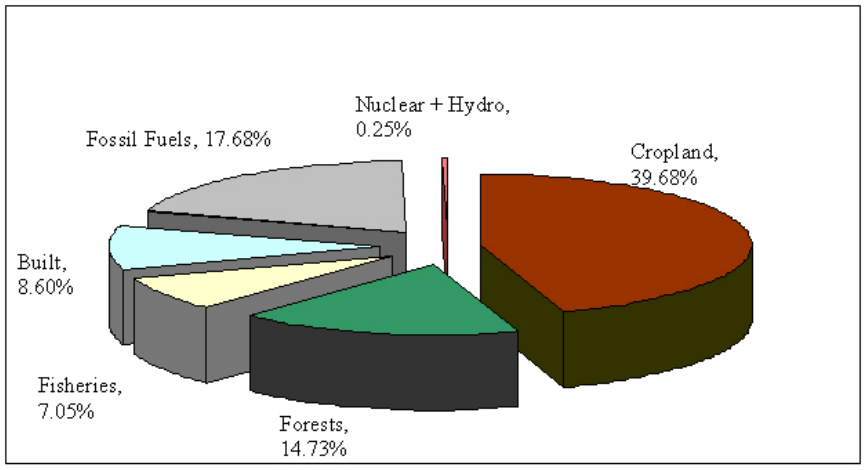


ILLUSTRATION 7:

MIDDLE INCOME COUNTRIES SOURCES OF FOOTPRINT

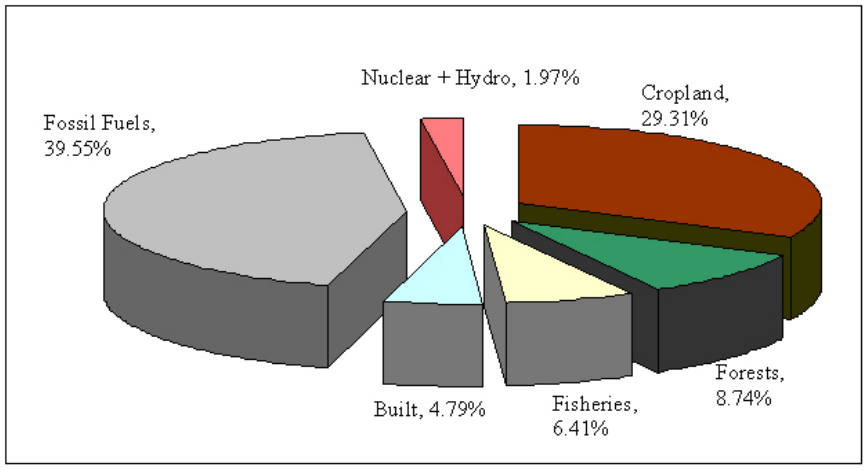


ILLUSTRATION 8:

HIGHER INCOME COUNTRIES: SOURCES OF FOOTPRINT

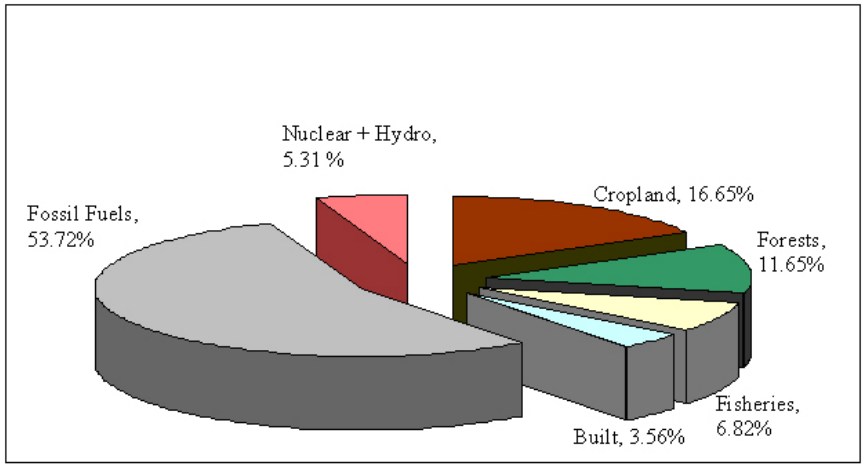


TABLE 2: Conversion: 2.471 acres/ha

ECOLOGICAL FOOTPRINT OF NATIONS

Country	Footprint (global hectares per capita)	Country	Footprint (global hectares per capita)	Country	Footprint (global hectares per capita)
United States of America	9.57	Croatia	2.76	Cameroon	1.24
United Arab Emirates	8.97	Botswana	2.70	Senegal	1.23
Canada	8.56	Macedonia	2.69	Ghana	1.23
Norway	8.17	Bulgaria	2.65	Guinea	1.22
New Zealand	8.13	Turkmenistan	2.60	Sudan	1.20
Kuwait	8.01	Mexico	2.59	Burkina Faso	1.19
Sweden	7.95	Namibia	2.52	Egypt	1.16
Australia	7.09	Romania	2.46	Mali	1.16
Finland	7.00	Korea Republic	2.43	Moldova Republic	1.13
France	5.74	Venezuela	2.42	Philippines	1.11
Mongolia	5.68	Brazil	2.39	Nigeria	1.10
Estonia	5.37	Lebanon	2.37	Kyrgyzstan	1.10
Portugal	5.34	Mauritania	2.36	Laos	1.09
Denmark	5.32	Paraguay	2.29	Kenya	1.08
Switzerland	5.26	Turkey	2.20	Zimbabwe	1.05
Belgium & Luxembourg	5.11	World	2.18	Guinea-Bissau	1.05
Ireland	4.97	Jamaica	2.15	Cambodia	1.03
Spain	4.90	Costa Rica	1.91	Zambia	1.02
Austria	4.87	Azerbaijan	1.91	Gambia	1.01
Greece	4.78	Panama	1.89	Indonesia	0.98
United Kingdom	4.72	Gabon	1.87	Madagascar	0.97
Latvia	4.40	Iran	1.85	Benin	0.92
Russia	4.28	Ecuador	1.77	Morocco	0.92
Germany	4.26	Syria	1.74	Tanzania	0.89
Czech Republic	4.24	Trinidad and Tobago	1.73	Sri Lanka	0.88
Korea DPRP	4.07	El Salvador	1.72	Sierra Leone	0.88
Saudi Arabia	4.05	Dominican Republic	1.69	Georgia	0.85
Israel	3.97	Algeria	1.67	Liberia	0.85
Japan	3.91	Bolivia	1.67	Eritrea	0.81
Lithuania	3.87	Cote D'Ivoire	1.60	Congo	0.80
Netherlands	3.81	Nicaragua	1.57	Rwanda	0.78
Kazakhstan	3.75	Honduras	1.54	Vietnam	0.76
Ukraine	3.53	Cuba	1.53	Myanmar	0.76
Slovenia	3.52	Tunisia	1.51	India	0.76
South Africa	3.52	Colombia	1.51	Angola	0.76
Poland	3.40	Bosnia Herzegovina	1.49	Armenia	0.75
Uruguay	3.32	Central African Republic	1.48	Pakistan	0.67
Slovakia	3.27	Thailand	1.41	Ethiopia	0.67
Italy	3.26	Jordan	1.39	Tajikistan	0.65
Hungary	3.26	China	1.36	Malawi	0.64
Mauritius	3.25	Chad	1.31	Burundi	0.63
Libya	3.21	Guatemala	1.30	Congo Dem Rep	0.62
Argentina	3.18	Uganda	1.29	Haiti	0.62
Belarus	3.17	Peru	1.26	Nepal	0.57
Chile	3.04	Albania	1.25	Mozambique	0.56
Malaysia	2.99	Papua New Guinea	1.25	Bangladesh	0.50

SANTA MONICA'S ECOLOGICAL FOOTPRINT 1990-2000

SUMMARY OF FINDINGS IN SANTA MONICA

This section of the report examines the City of Santa Monica's Ecological Footprint in 1990 and 2000. The major results of Santa Monica's Footprint assessment reveal that the city's Footprint declined between 1990 and 2000.

However, the study also indicates that in the larger context of global ecological sustainability and equity, the city's Footprint still cannot be considered ecologically sustainable. Furthermore, increases in electricity and gasoline use and built space have offset many of the gains made in the 1990s.

Reductions in the use of natural gas and diesel, increased recycling rates, and the City's procurement of geothermal energy explain much of the Footprint reduction over the decade. Santa Monica's dedication to sustainability has helped reduce its Ecological Footprint, though there remains room for further progress as the pursuit of sustainability continues.

WHAT GOES INTO A MUNICIPALITY'S ECOLOGICAL FOOTPRINT?

The Ecological Footprint measures humanity's use of nature. A city's Footprint is the biologically productive area required to produce the resources (food, energy, and materials) and to absorb the waste put out by the city's residents over the course of a year. Since people use resources from all over the world, the Footprint methodology adds up the cropland, forests, and other natural resources that are required to produce the products consumed by a given population — wherever they may be located on the planet. Footprints can be used to evaluate a city, country, or the entire human population in terms of ecological sustainability. They can also be used to help explore where the greatest potential for progress toward sustainability can be achieved.

When considering a municipality's Footprint it is worthwhile to examine it within the context of global sustainability. Is the city's Footprint above or below the world average? If everyone on the planet had similar Footprints to the average city resident, would this be sustainable? Is the city's Footprint getting bigger or smaller? If sustainability is the city's goal, where can the greatest progress be made in reducing human pressure on the planet and future generations? The Footprint helps to answer these important questions.

METHODOLOGY

Redefining Progress has calculated Ecological Footprints for over 130 countries (see page 12), numerous regions (most recently in the San Francisco Bay Area), and an increasing number of municipalities and businesses around the world. The Footprint calculations for Santa Monica were estimated using local data where available and reliable. In the case of limited or missing local data, county, state, or national data was scaled to the local level. In the case of Santa Monica, local data included:

Santa Monica's dedication to sustainability has helped reduce its Ecological Footprint, though there remains room for further progress as the pursuit of sustainability continues.

- Acreage and land use types
- Electricity use by source
- Natural gas use
- Gasoline and Diesel fuel use
- Transportation and vehicles statistics
- Road miles
- Housing characteristics
- Waste and recycling mix and tonnage

Footprinting facilitates the conversion of various factors into ecologically productive land area equivalents. For example, the production of 100 pounds of beans might require one half acre of arable (farm) land. However, on top of the production acreage, the energy, transportation, packaging, and built space requirements involved in bringing the beans to market are incorporated in the Footprint in a common unit.

The carbon dioxide emitted from fossil fuel use typically makes up the largest part of the energy component of the Footprint.

The largest component of a Footprint tends to be associated with energy use. The carbon dioxide emitted from fossil fuel use typically accounts for the largest part of the energy component of the Footprint. Global average (per acre) forest sequestration rates are used as the baseline for estimating the 'carbonprint.' For example, if one metric ton of CO_2 requires about 2.5 acres (1 hectare)

of forest land to absorb, fossil fuel use that resulted in a tonne of CO_2 would add 2.5 acres to a Footprint.

Emission factors for natural gas, gasoline, and diesel are standardized in the scientific literature. The combination of energy sources that go into the production of electricity varies by region. To some extent, this reduces a city's ability to change its Footprint without reducing energy use. In the case of Santa Monica, the Lawrence Berkeley National Laboratory estimates that for each kilowatt hour used in Southern California, 2.2 pounds of carbon are emitted (Price et al., 2002), which is nearly double San Francisco Bay Area average. The City of Santa Monica also purchases geothermal energy, and the calculations account for this.

Other factors in the Footprint include: built space, housing, food (including seafood) products and services, and waste/recycling. Built space is treated as formerly productive arable land. Sea space (fisheries) impacts are estimated based on the most productive areas of the ocean (near the shore) and not the entire ocean. Wood and materials in housing are amortized over 40 years and based upon the materials and energy that go into the construction of the average home in the US, adjusted for Santa Monica's average square footage per housing unit and age of housing stock. Recycling is treated as a positive because it reduces energy and landfill space demand.

The food, products, and services Footprint factors are based on national data from Redefining Progress's national Ecological Footprint calculations. These estimates use government data on national production and trade of all major resources and goods. For this study, they were scaled to the local level using population figures and adjusted for net imports-exports using Los Angeles county economic data. More information about the Footprinting methodology can be found at Redefining Progress's website, www.redefiningprogress.org.

RESULTS

The full results of the study of Santa Monica's Ecological Footprint for 1990 and 2000 will be released later in the spring of 2004. They will be posted on Redefining Progress's regional and local sustainability web page: www.RegionalProgress.Org. Following is a preview of the findings related to energy.

Since 1990 there has been an overall reduction in the energy component of the Santa Monica's total Footprint. In part, this reduction is explained by the City's procurement of renewable (geothermal) energy in 1999, and a decrease in overall natural gas and diesel fuel use. Additional reductions in overall energy use and an increase in the mix of renewable (solar, wind, and geothermal) energy would further generate significant reductions in Santa Monica's Footprint.

Most of the environmental impacts associated with transportation also show up in the energy category. For example, carbon emissions associated with gasoline, diesel, and increasingly natural gas-powered vehicles are incorporated in energy use. Reduced dependence on fossil fuel-powered vehicles would curtail this component of the city's Footprint. The City of Santa Monica is moving ahead of the curve on this front with solar powered electric vehicle charging stations, aggressive public transportation promotions, and a city employee trip reduction program.

ALMADA, PORTUGAL

The municipality of Almada, located near Lisbon chose to use the Ecological Footprint as a municipal theme for measuring their progress toward greater sustainability.

The measure has been featured in their city magazine, with a headline challenging readers to calculate their own Ecological Footprints. The municipality worked with Redefining Progress to develop a customized front end for the individual Footprint calculator, translated into Portuguese (view the webpage at: http://www.m-almada.pt/pegada/).

Redefining Progress and the municipality also worked together to add graphics to a free-standing version of the Footprint calculator, making the quiz more suitable for children. This cd-based version was distributed to schools throughout the city, so schoolchildren can calculate their own Ecological Footprints in the classroom.

The effort to help citizens become aware of their own impact on the planet is part of a broader campaign at the municipal level to improve local sustainability.

Additional benefits to the economy may result from a reduction in fossil fuel use. Whereas the purchase of imported oil ultimately results in the export of local economic capital abroad, increased reliance on domestic renewable resources would help to retain those resources.

Increased recycling rates during the 1990s helped the city reduce its Footprint. According to the Natural Resources Defense Council (1997), for every ton of glass, paper, plastic, and metal diverted from landfills and recycled the city reduces its potential energy use by about 50%. Santa Monica residents currently recycle at a rate of 54%; reducing the size of the total waste stream would help reduce Santa Monica's Footprint. Municipal governments can make important contributions to increasing recycling rates through innovative disposal programs.

SUSTAINABILITY IN THE CITY

The City of Santa Monica has earned its reputation as a leader in the sustainable communities movement (ICLEI, 1997; Venetoulis 2001). For decades, the city's progressive population has elected representatives to the local and state government who are willing to be leaders on environmental, social, and economic issues — the three pillars of sustainability. The commitment to sustainability combined with the political will and leadership helped lay the groundwork for the City of Santa Monica's Sustainable City Program's official adoption in 1994. It is worth noting that many communities pursuing sustainability often lack the political wherewithal to move the agenda forward; clearly this has not been the case in Santa Monica.

From the outset, the Sustainable City's guiding principle has been to meet current generations' needs without compromising the ability of future generations to meet their own needs. "The long-term impacts of policy choices will be considered to ensure a sustainable legacy" (City of Santa Monica, 1994). Santa Monica's theme draws from the historic 1987 international agreement on sustainable development (World Commission on Sustainable Development, 1987)—a theme echoed by a majority of local and regional sustainability programs throughout the world.

Santa Monica has bolstered this rhetoric with the establishment of a sustainability program, indicators to track progress toward specific targets, and substantive actions. As a result, the City has adopted practices and policies that have decreased fossil fuel use, water use and pollution, increased green space, and engaged community members. Despite the high level of dedication, not all the trends over the last decade are entirely favorable. In particular, the City of Santa Monica's 2002 Status reports indicates that a booming local economy in the late 1990s contributed to increase waste generation and energy use in the residential and commercial sectors.

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The Ecological Footprint provides a captivating and compelling way to analyze numerous environmental impacts within the context of ecological sustainability. To be sure, it does not address all the concerns of the City's sustainability program. For example, household hazardous waste is not covered in the Footprint methodology. Still, by examining significant energy, land use, transportation, material consumption, and waste/recycling factors in Santa Monica, the Ecological Footprint analysis conducted for this report revealed that the City has undertaken many positive actions.

The results of this study indicate that Santa Monica's dedication to sustainability has helped significantly reduce its Ecological Footprint and helped point the way toward future progress. Redefining Progress and the City of Santa Monica have committed to continue to track Santa Monica's Ecological Footprint over the next several years.

The Ecological Footprint provides a captivating and compelling way to analyze numerous environmental impacts within the context of ecological sustainability.

ECOLOGICAL FOOTPRINT FOR THE SAN FRANCISCO BAY REGION

PRODUCING AN ECOLOGICAL FOOTPRINT FOR THE SAN FRANCISCO BAY AREA

The Bay Area Alliance for Sustainable Communities (Alliance) is a multi-stakeholder coalition established in 1997 to develop and implement an action plan that will lead to a more sustainable region. The Alli-

ance works to ensure that representatives of the 'three Es' (Economy, Equity, and Environment)—and Government—come together at all levels to address major regional challenges.

The Bay Area's residents on average have a per capita Footprint that is smaller than the United States average, but is still well beyond the Fair Earthshare and can be considered unsustainable.

The Alliance released its first indicators report in January of 2003, "Bay Area Indicators: Measuring Progress Toward Sustainability." The report, summarizing sustainability indicators data for the Bay Area, is intended to support the group's Compact for a Sustainable Bay Area, which seeks to reach regional consensus among a critical mass of stakeholder organizations and civic leaders on a shared vision rooted in common values about how the region can grow in a more sustainable manner. The initial draft of the indicators report did not include the region's Ecological Footprint, but did leave room for it to be included in a future version.

The Bay Area's Ecological Footprint report will be released on March 30, 2004 at www.RegionalProgress.Org

Redefining Progress became more involved with the Alliance during the latter half of 2003 and has calculated Ecological Footprint results for the nine counties in the Bay Area and the region as a whole. Working with the Alliance's steering committee to help the members understand the methodology and message of the Ecological Footprint, Redefining Progress and the Alliance are prepared to jointly release the results at the end of March 2004. The full report, including results for each county and the region, will be found at: www.RegionalProgress.Org.

PREVIEW OF SAN FRANCISCO BAY AREA ECOLOGICAL FOOTPRINT RESULTS

Fair Earthshare: The Fair Earthshare represents the total amount of ecologically productive land area (included in the Footprint) divided by the world's population. So, for example, if there were 1 million hectares (247 million acres) of ecologically productive land and sea area on the planet and 1 million people, the Fair Earthshare would be 1 hectare (2.47 acres) per person. Currently, it is estimated that the Fair Earthshare is about 4-5 acres (2 hectares) per person.

The Bay Area's residents on average have a per capita Footprint that is smaller than the United States average, but is still well beyond the Fair Earthshare and can be considered unsustainable. The analyses suggest that there are some significant differences between the counties that make up the region. For example, San Francisco County's overall Ecological Footprint index is the smallest in the region. This difference appears to largely be due to the strong public transportation infrastructure and balance of jobs to housing in the county.

POLICY IMPLICATIONS

The Ecological Footprint results for the Bay Area suggest policy changes that will be highlighted in the forthcoming report to be posted at www.RegionalProgress.Org. Such changes, particularly on the part of local government agencies, can result in improved quality of life while helping to reduce the region's Ecological Footprint. The single largest component of any Ecological Footprint on the basis of land area is Energy Land. Therefore, policies that reduce local reliance on non-renewable energy sources are the most effective way to reduce the overall size of a community's Footprint. Local governments can, for example:

- Require developers to build green buildings out of recycled content materials that are more reliant on renewable energy such as wind and solar. Such buildings are more pleasant and productive places to live, work, and play.

- Encourage compact building to reduce reliance on single-passenger vehicles and make public transit more viable. Compact communities encourage interaction among residents and make it possible to provide local services with fewer ecological impacts.

Forest Land is another major component of the Ecological Footprint over which local governments have some control. Local governments can, for example:

- Require housing developers to use sustainably harvested wood products and recycled content building materials where possible. Encourage the re-use of building materials after demolitions.

- Implement more aggressive paper recycling and re-use campaigns.

The Bay Area's Ecological Footprint report will be released on March 30, 2004 at www.RegionalProgress.Org

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Redefining Progress *(RP) is a non-profit organization that works with a broad array of partners to shift the economy and public policy toward sustainability. RP measures the real state of our economy, of our environment, and of social justice with tools like the Genuine Progress Indicator and the Ecological Footprint. We design policies–like environmental tax reform–to shift behavior in these three domains towards sustainability. We promote and create new frameworks–like common assets–to replace the ones that are taking us away from long-term social, economic, and environmental justice.*