



Curitiba's BioCity Program

Local action to stop global biodiversity loss

Our Group

Steven Bassett

Peter Kaminski

Jeff Leland

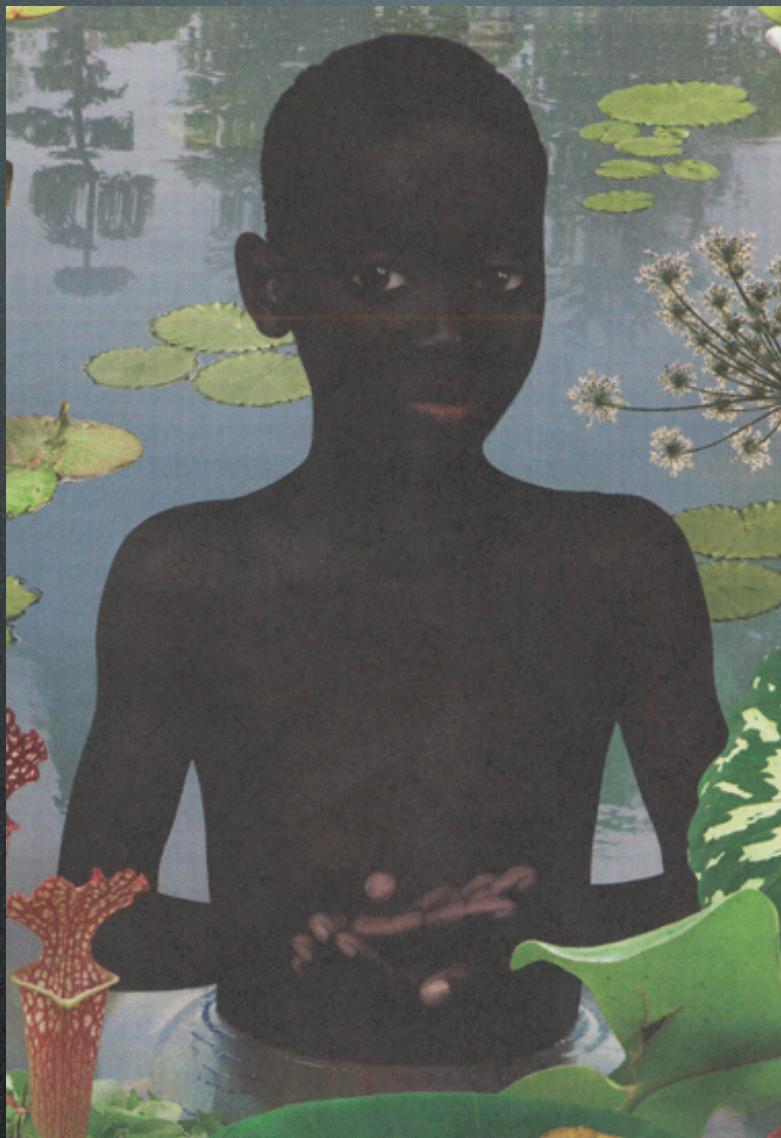
Laura Spitzmiller

Why is Biodiversity
important?



NATURE
podcast

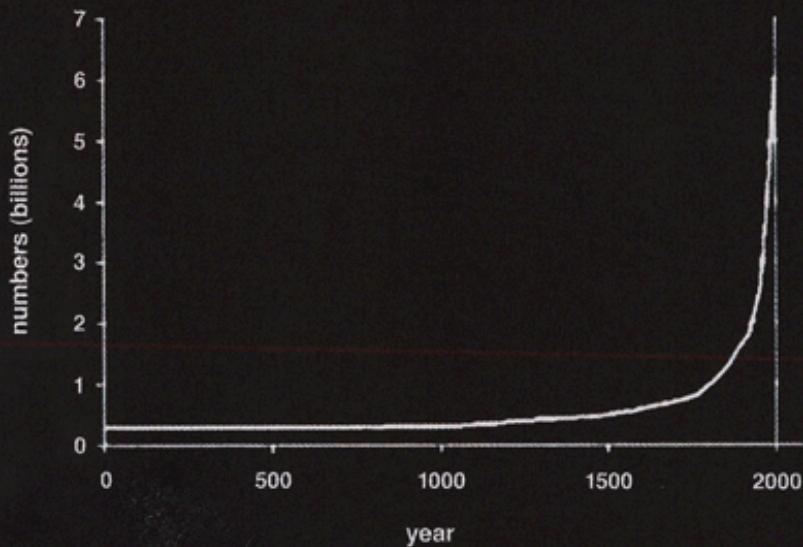
PBS' Nature on Biodiversity



WE ARE CONNECTED

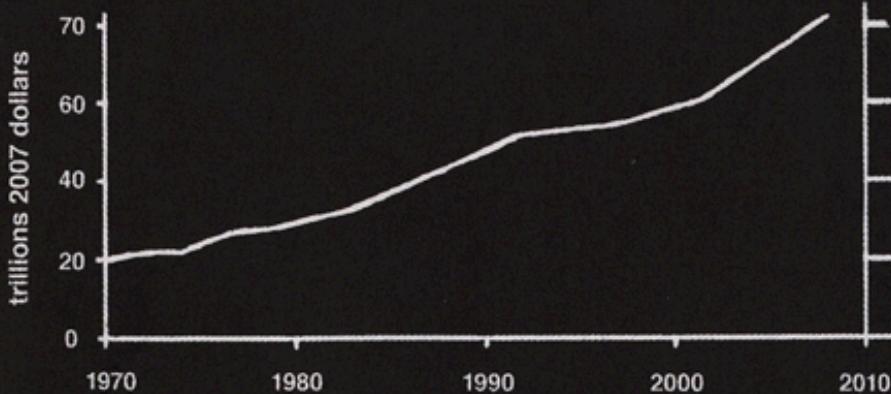
SOME BASIC FACTS:

World Population Growth



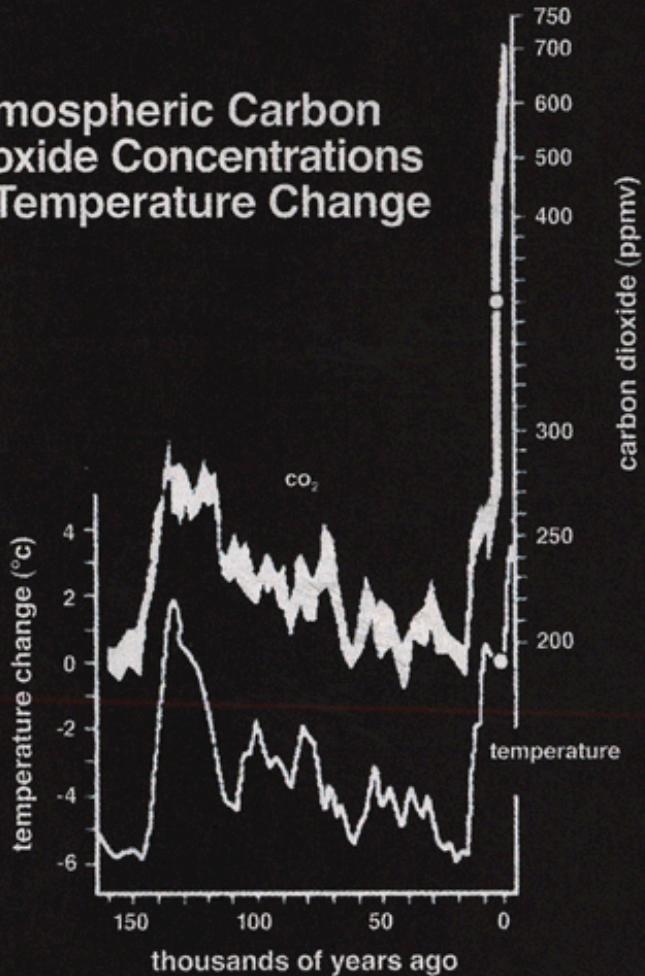
Human population may now have reached the carrying capacity of the planet.

Gross World Product



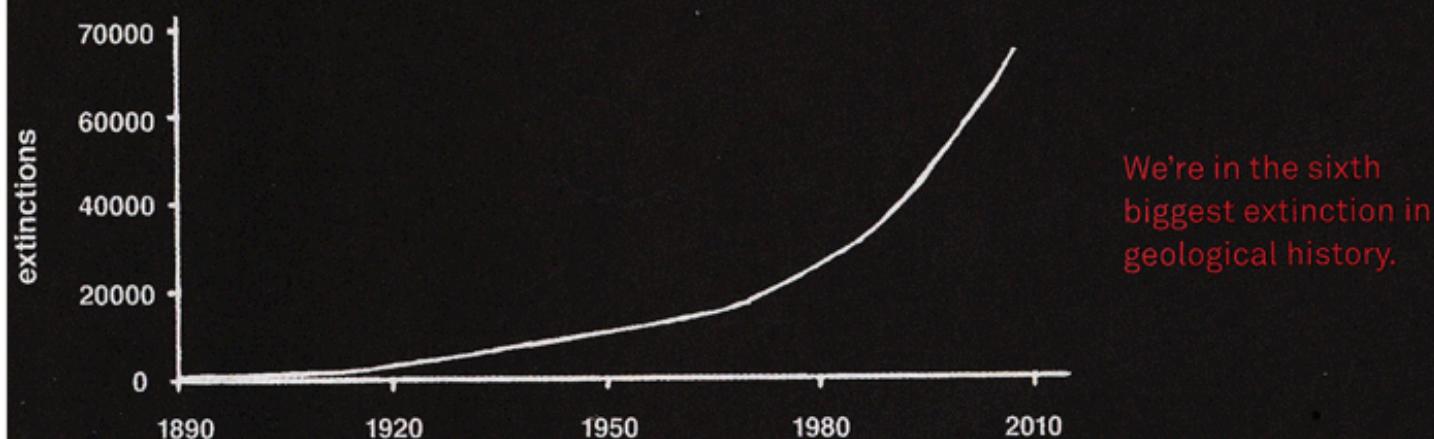
Continued growth may no longer be a viable option.

Atmospheric Carbon Dioxide Concentrations & Temperature Change



We may be approaching
a “tipping point” on
global warming.

Species Extinction



Importance of Biodiversity

- the planet's resilience
- water, soil, air quality
- food security
- cultural and spiritual values
- detoxification and decomposition of waste



Embracing Diversity

- Diversity in a homogenizing world
 - loss of connection to the vernacular built form
 - loss of indigenous land ethics and spirituality
 - loss of local cultures with globalization



International Importance

The UN decided to Adopt the 2010 goals of:

- ↓ Reduce global biodiversity loss
- 🚫 Elimination of poverty
- ❤ The benefit of all life on earth

Endorsed by:

The World Summit on Sustainable Development

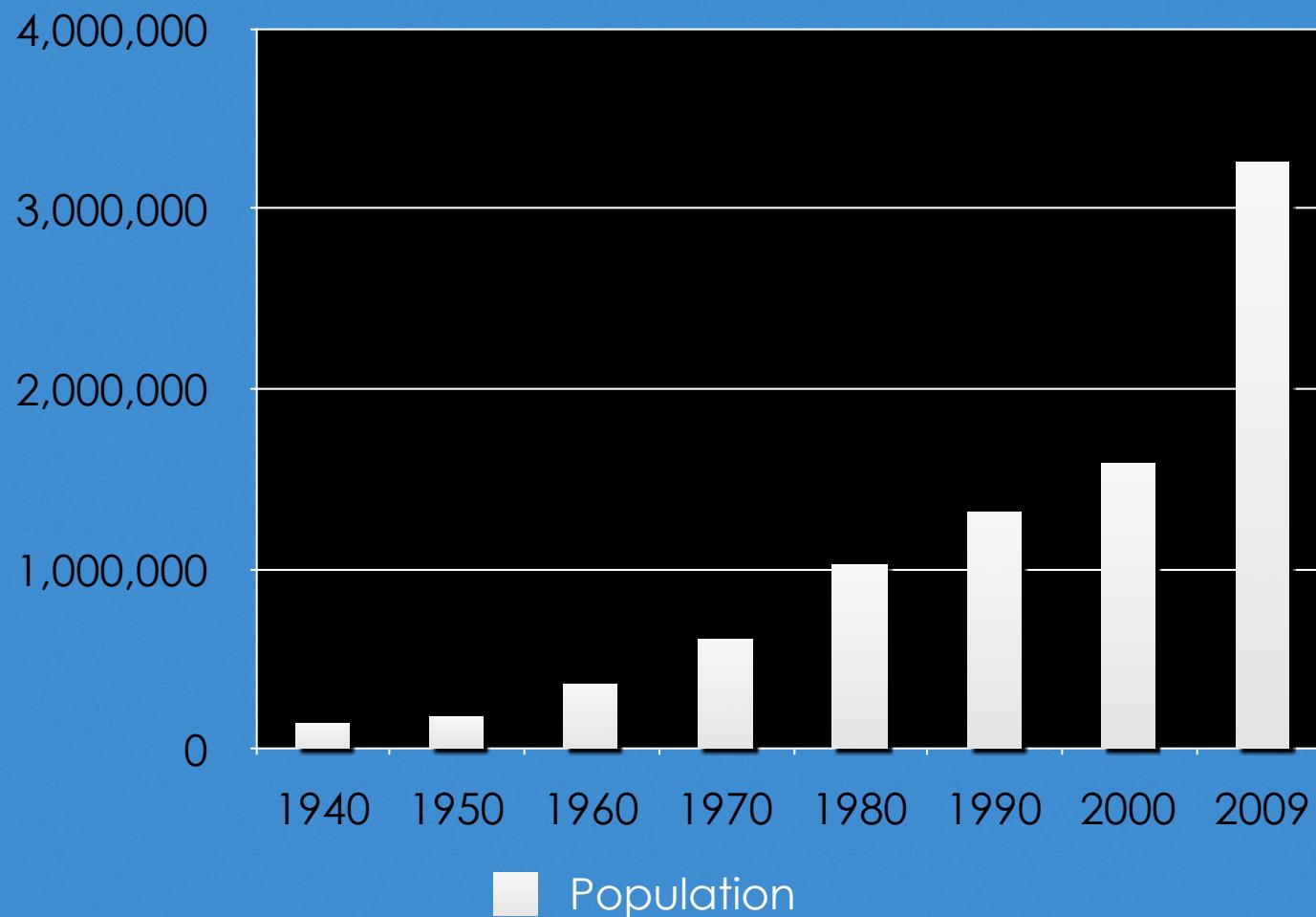
United Nations General Assembly



Curitiba?

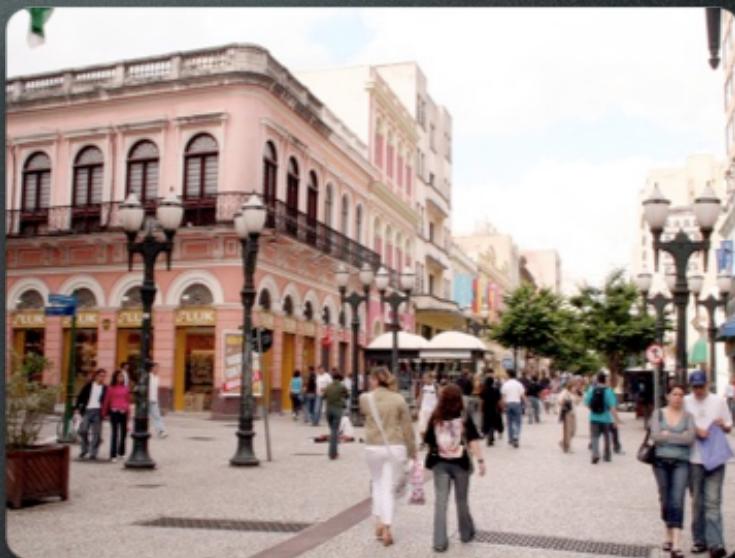


Curitiba and Municipalities

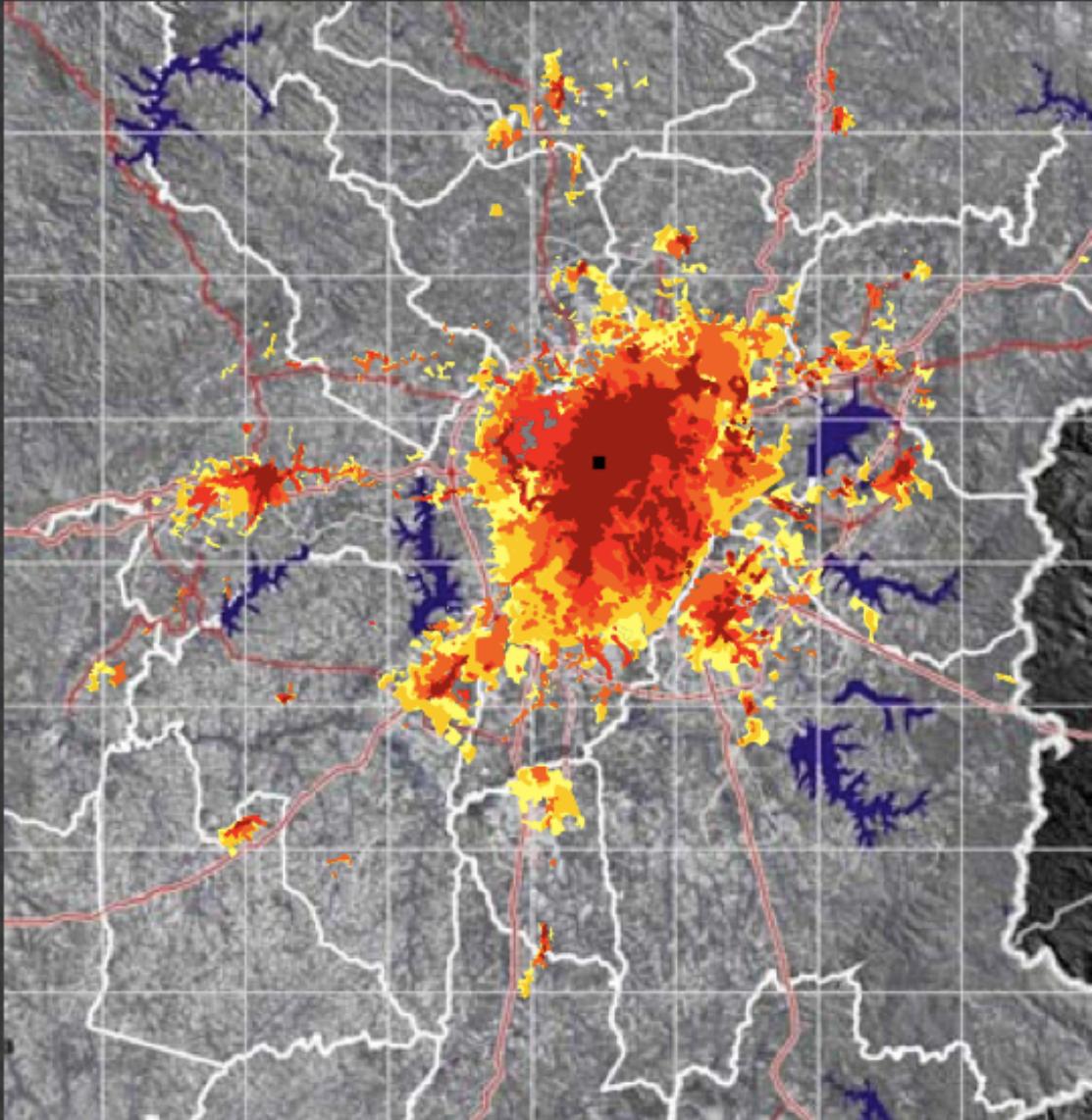


1968 Masterplan

- Unchecked growth in the 1960's
- Curitiba Master Plan adopted in 1968
 - controls on sprawl
 - preservation of historic center
 - trinary road systems
 - express bus systems



Evolution of Urban Growth



Curitiba and
Metropolitan Region

YEAR	POPULATION
■ 1955	360.000
■ 1965	550.000
■ 1975	1.140.000
■ 1985	1.700.000
■ 2000	2.770.000
■ 2014	4.000.000

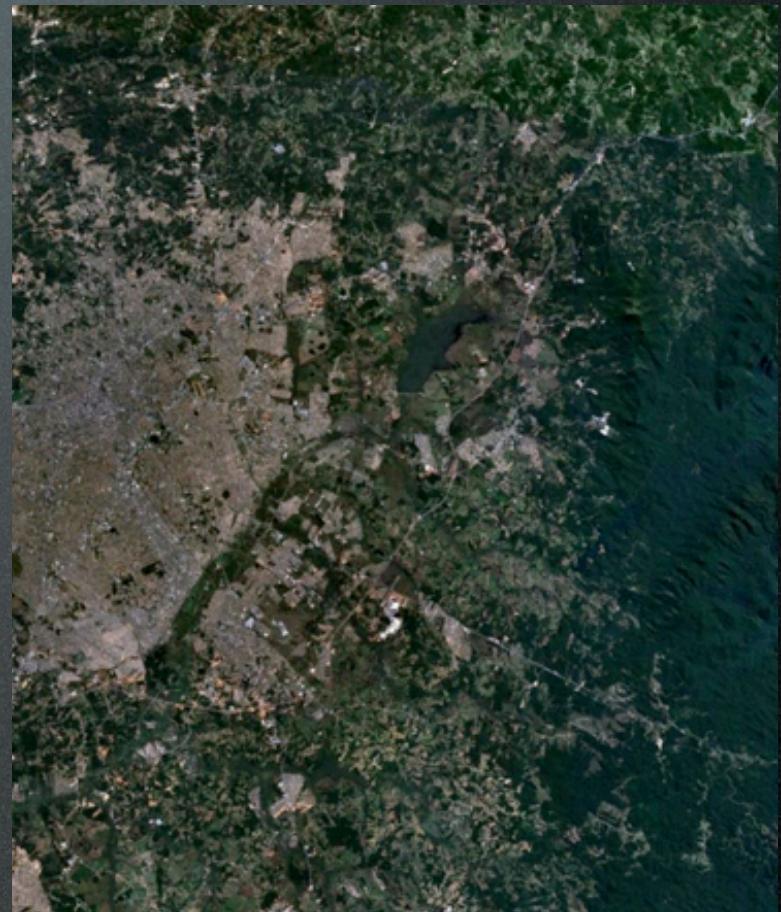
Curitiba Today

- Known globally as one of the best planned cities and the ecological capital of the world.
- Growth fueled by higher quality of life.
- City now supports 3.1 million people.
- Planners are still trying to manage the growth.



Identified Urban Threats to Biodiversity

- Deterioration of native species is due to:
 - Habitat fragmentation
 - Development has cut through habitat
 - Draining of marshes
 - Loss of valuable wet-lands
 - Pollution of water systems
 - Creation of hardscapes (sealing the soil)

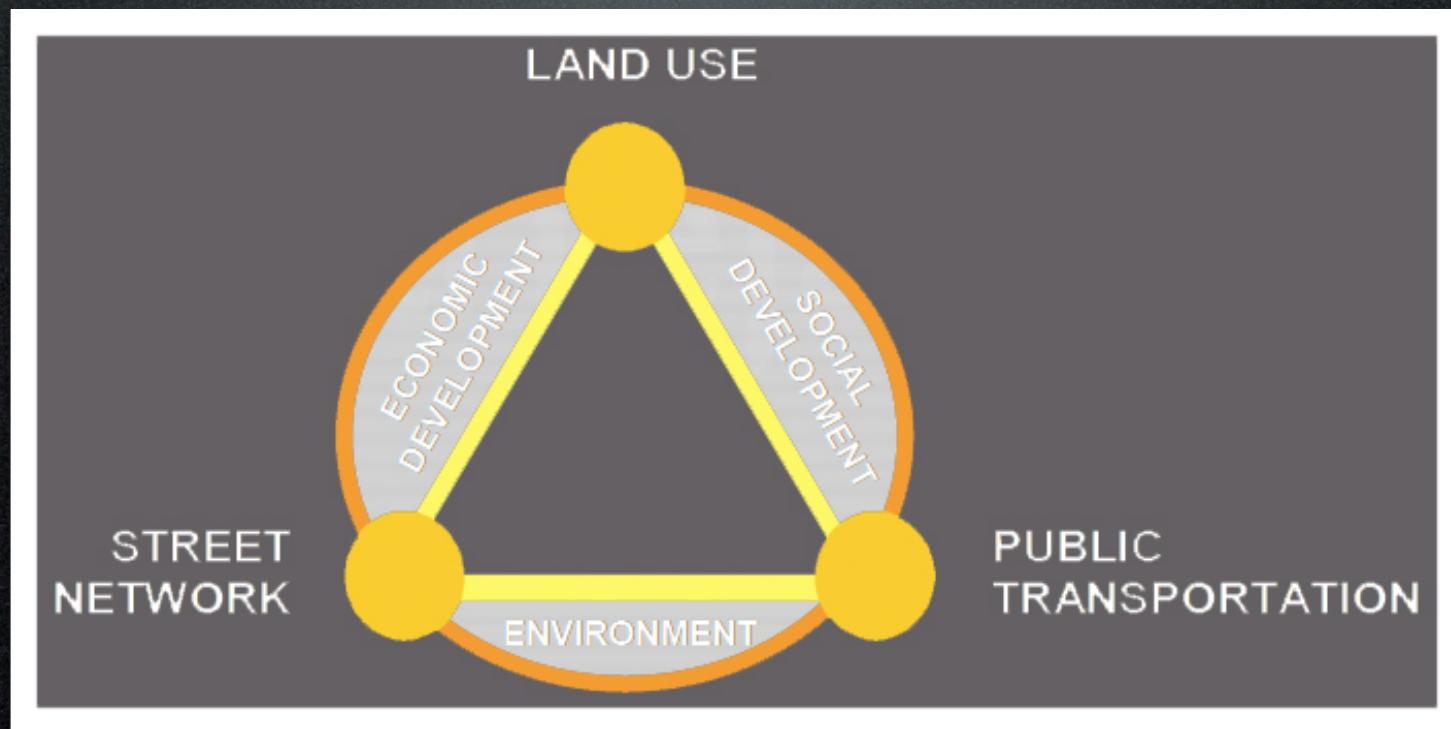




Curitiba's Response

Curitiba's BioCity Program

- "Curitiba's BioCity Program combines public and private initiatives in an effort to contribute to the global target to reduce the loss of biodiversity by 2010. The BioCity Program aims to halt the rapid rate at which cities develop, which can affect natural areas, destroy ecosystems, fragment natural spaces and often drives species to extinction."



Components of the Program

KEY TARGETS:

Reintroduction of ornamental indigenous plant species within the city

Establishment of Conservation Units and Habitat Enhancement Programs

Preservation of Natural Resources

Air Quality/Mobility and Transportation

Economical Job Creation and Social Programs Against Poverty

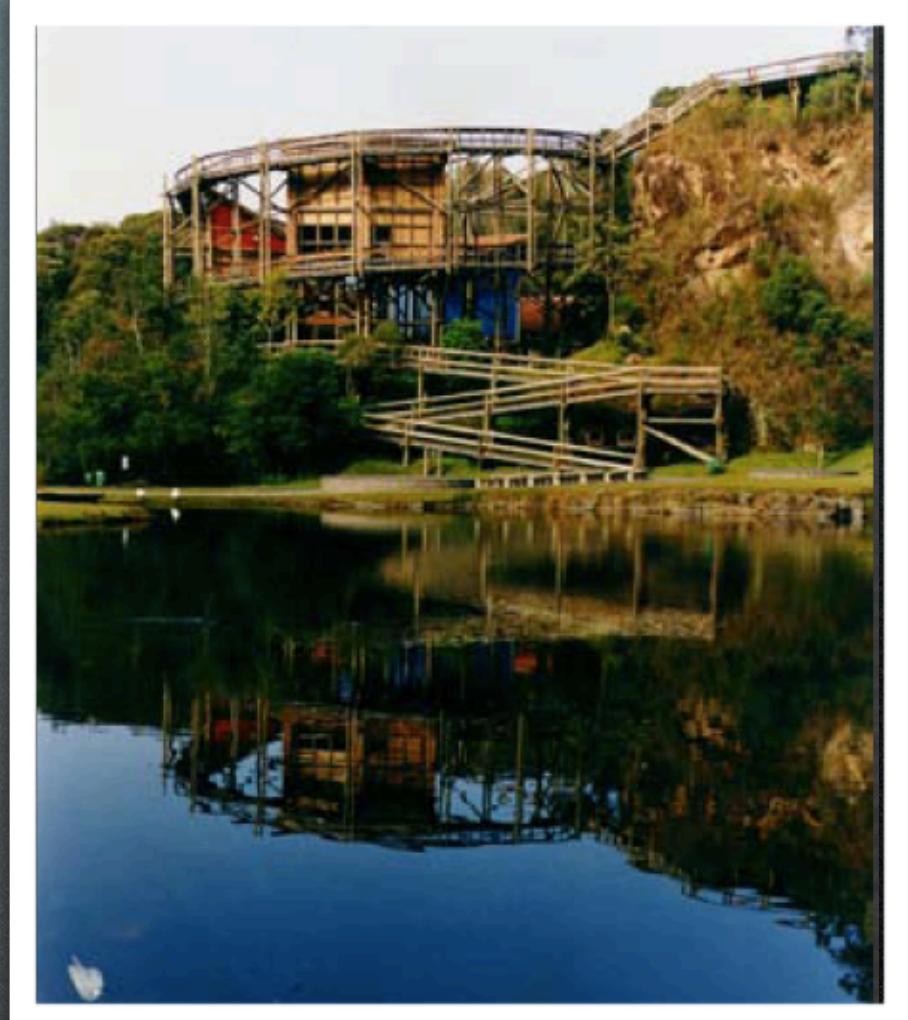
Reintroduction of Native Flora and Fauna

- **Purpose**

- To reverse the damage of urbanization has placed on the natural habitat

- **Project Results**

- 300,000 planted trees
- Botanical Garden
- Biodiversity Tower
- Open University for the Environment

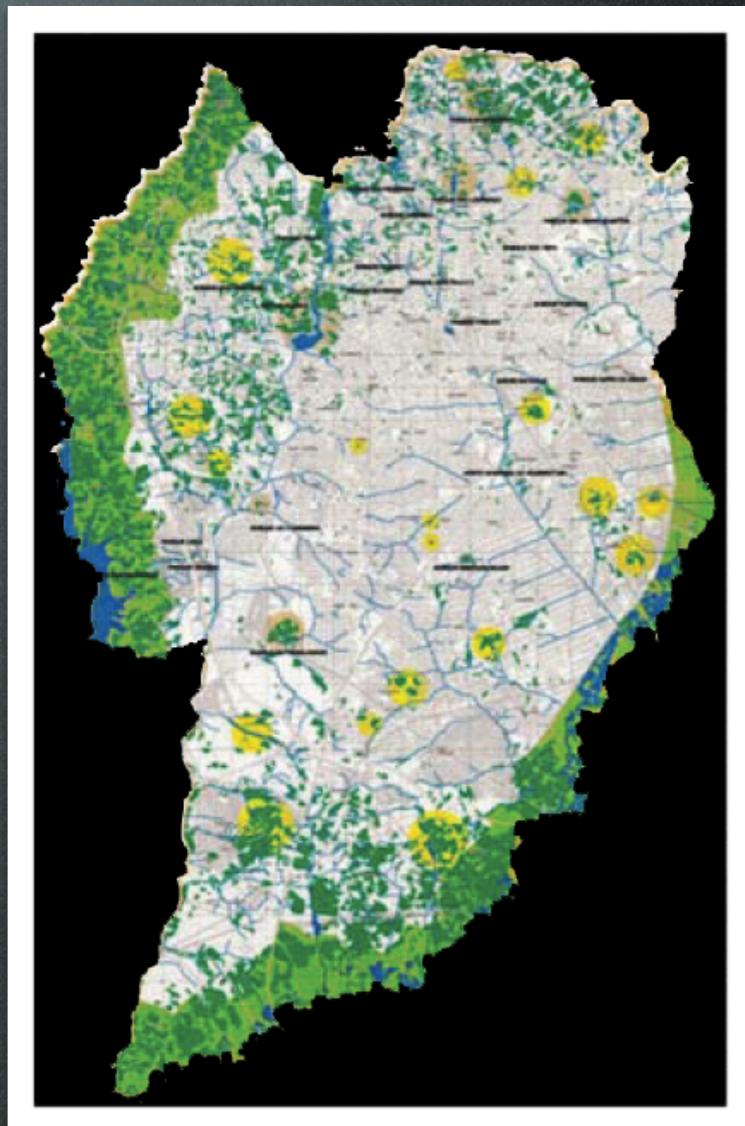


CITIZEN AWARENESS PROGRAMS



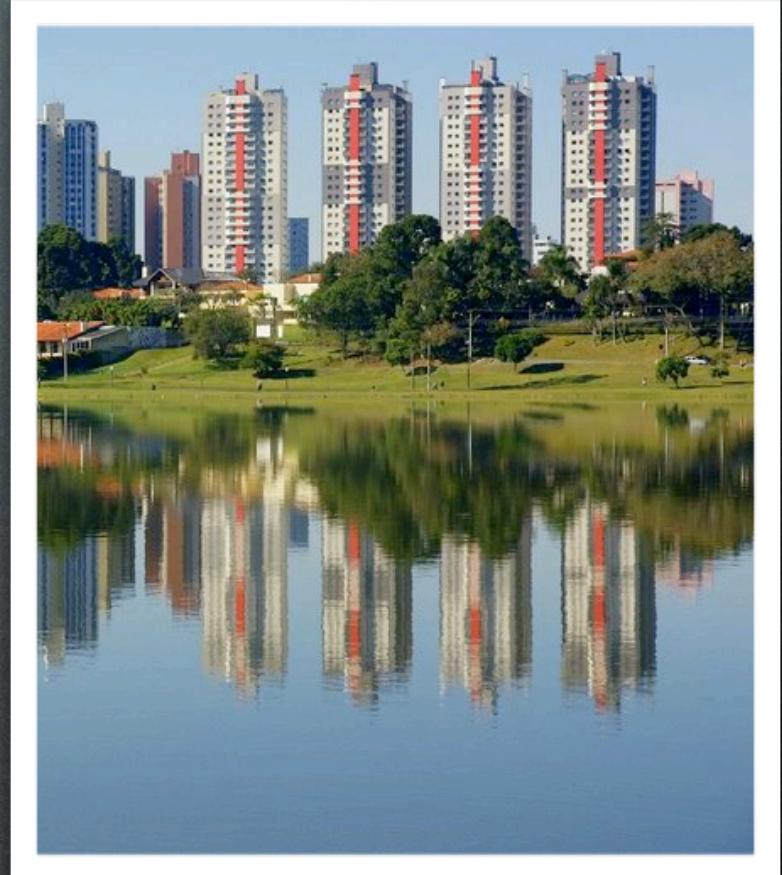
Habitat Preservation and Enhancement

- Purpose
 - Preserve and enhance existing ecosystems and species
- Project Results
 - Planned growth of conservation areas, green corridors and parks - 17% city classified as “green areas”
 - Adopt a Tree Program
 - Interpretive Trail Program
 - Program of Adoption of Public Areas



Preservation of Natural Resources

- **Purpose**
 - To manage and conserve finite resources damaged by uncontrolled growth.
- **Project Results**
 - Program of Water Conservation and Rational Use in Buildings
 - planned expansion of utilities to these areas to alleviate pressure on the environment.
 - Ethanol production for energy use
 - Cultural Change



Economic and Social Development

- Socio-Environmental Programs
 - Garbage That is Not Garbage
 - Green Trade
 - Open University
- Affordable Housing Development with Transit Access
- Social Care:
 - health, education, public computer access, food access programs and municipal guards



Transportation: Green Line BRT

- The Green Line was conceived to transform Federal Highway into a urban avenue
 - Integrating the urban environment
 - Reducing congestion on North-South line
 - Increase the reach of the system
 - Increase urban green spaces and three main parks



What else could be
done?

Suggested Additions to Measure

- Investment into ecological tourism, and market driven habitat preservation.
- Integration with international habitat preservation programs and organizations
- Strict urban growth boundaries, while incorporating all the current slum-development on fringe
- Greater investment into bottom-up development in slums
- Design review criteria for green spaces (encourage native flora and fauna)
- Wetland Preservation and Restoration Programs

Action Level	Components of Action	Habitat Fragmentation	Environmental Contamination	Social Impacts	Conclusion
NO ACTION	NO CHANGES FROM CURRENT GROWTH, POLICIES AND PROGRAMS	URBAN SPRAWL WILL FRAGMENT AND DESTROY WILDLIFE HABITAT	INCREASED POPULATION AND ECONOMIC GROWTH; DAMAGE TO SENSITIVE ECOSYSTEMS	SOCIAL SYSTEMS STRAINED BY INCREASED POPULATION GROWTH, UNINCORPORATED INFORMAL DEVELOPMENTS LACK SERVICES.	LEAST DESIRABLE
BIOCITY PROGRAM	REINTRODUCTION OF NATIVE FAUNA; HABITAT PRESERVATION; CONSERVATION OF NATURAL RESOURCES; IMPROVEMENT IN PUBLIC TRANSIT; ECONOMIC AND SOCIAL DEVELOPMENT PROGRAMS	CONTROLLED GROWTH WILL MITIGATE IMPACTS, CREATION OF GREEN SPACES AND INTRODUCTION OF NATIVE PLANTS WILL INCREASE AMOUNT OF URBAN HABITAT FOR SOME SPECIES	AIR QUALITY MEASURES WILL LIMIT EMISSIONS; INCREASED AVAILABILITY OF BUS RAPID TRANSIT WILL DECREASE EMISSIONS	ENVIRONMENTAL EDUCATION PROGRAMS; ECONOMIC GROWTH PLAN; EDUCATION OPPORTUNITIES; AFFORDABLE HOUSING PROJECTS; AFFORDABLE AND EFFICIENT TRANSPORTATION	PROGRESSIVE PLAN TO REDUCE THE CITY'S IMPACT ON THE ECOSYSTEM. HELPS MAINTAIN CURITIBA'S ROLE AS A LEADER IN SUSTAINABILITY.
ADDITIONAL SUGGESTED MEASURES TO BIOCITY PROGRAM	CREATION OF MARKET DRIVEN HABITAT PRESERVATION (ECOTOURISM ETC); MUNICIPAL INCORPORATION OF INFORMAL SETTLEMENTS; STRICT NO-GROWTH POLICIES; GREATER EFFORT IN RESTORING WETLANDS; NEIGHBORHOOD BICYCLE CO-OPERATIVES.	ZERO GROWTH WILL STOP ANY ON GOING FRAGMENTATION; ECONOMIC DRIVEN HABITAT CONSERVATION; WETLAND RESTORATION WILL IMPROVE ECOSYSTEMS' INTEGRITY.	SHIFT TO AN ECO-CENTRIC ECONOMY WILL REDUCE CONTAMINATION; THE REDUCTION IN URBAN DEVELOPMENT WILL REDUCE OUTPUTS; BICYCLE AVAILABILITY WILL OFFER AN ALTERNATIVE TO DRIVING.	ECO-DRIVEN JOB GROWTH WILL REDUCE POVERTY, PROVISION OF SERVICES AND UTILITIES TO UNDERPRIVILEGED, EVEN MORE AFFORDABLE TRANSPORTATION GIVEN BY THE USE OF THE BICYCLE.	PREFERRED; ADDITIONAL MEASURES WOULD HELP THE CITY EVEN FURTHER REDUCE ITS IMPACT ON THE ECOSYSTEM.

Conclusion

The groundbreaking 175 million dollar BioCity program constitutes a concrete example of urban planning that takes into consideration bio-diversity-related issues. The BioCity program has effectively minimized such consequences through the implementation of 5 key projects aimed to promote biodiversity.

- EIA beneficial to environment
- Opens possibilities for future measures
- Promotes global awareness of BioCity initiative

Questions?

References

- “About the 2010 Biodiversity Target” Convention on Biodiversity. 5 November 2009 <http://www.cbd.int/2010-target/about.shtml>
- Guimaraes, Eduardo Pereira. “Local Action for Biodiversity” International Relations City of Curitiba. 5 November 2009 <www.iclei.org/biodiv-2008>
- Macedo, Joseli. “Curitiba” Cities. Volume 21. Issue 6 December 2004 <<http://www.sciencedirect.com/science/article/B6V9W-4DTJRVN-8/2/424cb398a8ab62e0b42927fa44ff09f6>>
- Guimaraes, Eduardo P. "Transportation Forum 2009." [Http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1234451048011/5827121-1239045090161/Guimaraes_Curitiba.pdf](http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1234451048011/5827121-1239045090161/Guimaraes_Curitiba.pdf). Eduardo P Guimaraes, 31 Mar. 2009. Web. 14 Nov. 2009.