Measuring the Ecological Footprint of a Military Installation:

How Much Nature Do We Consume?

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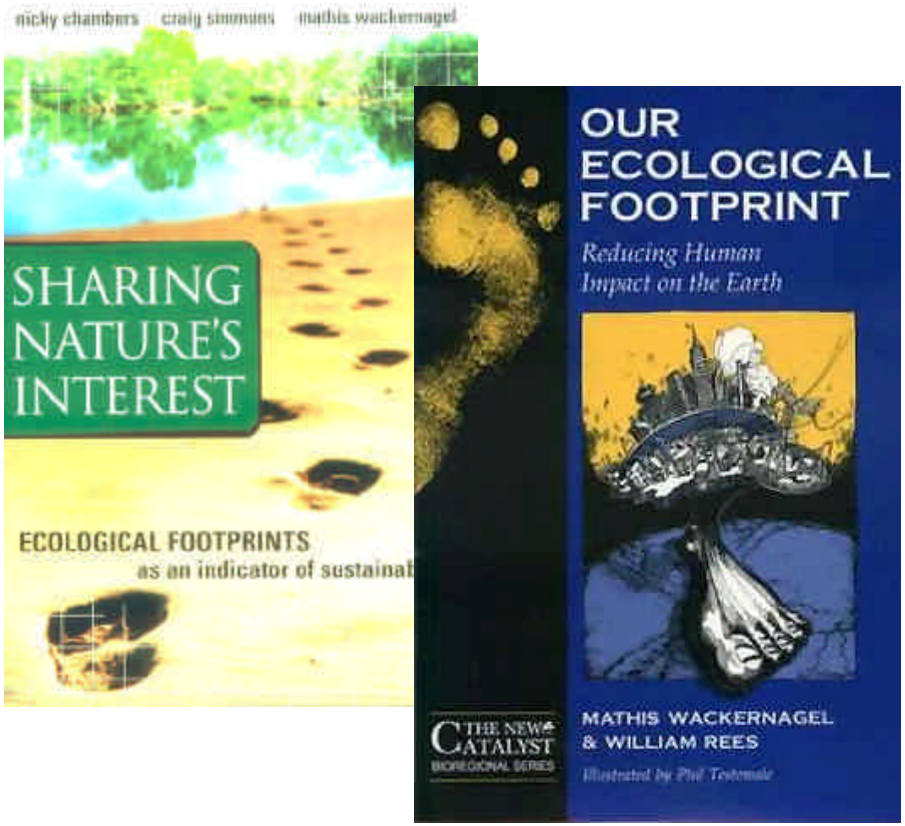
Partners

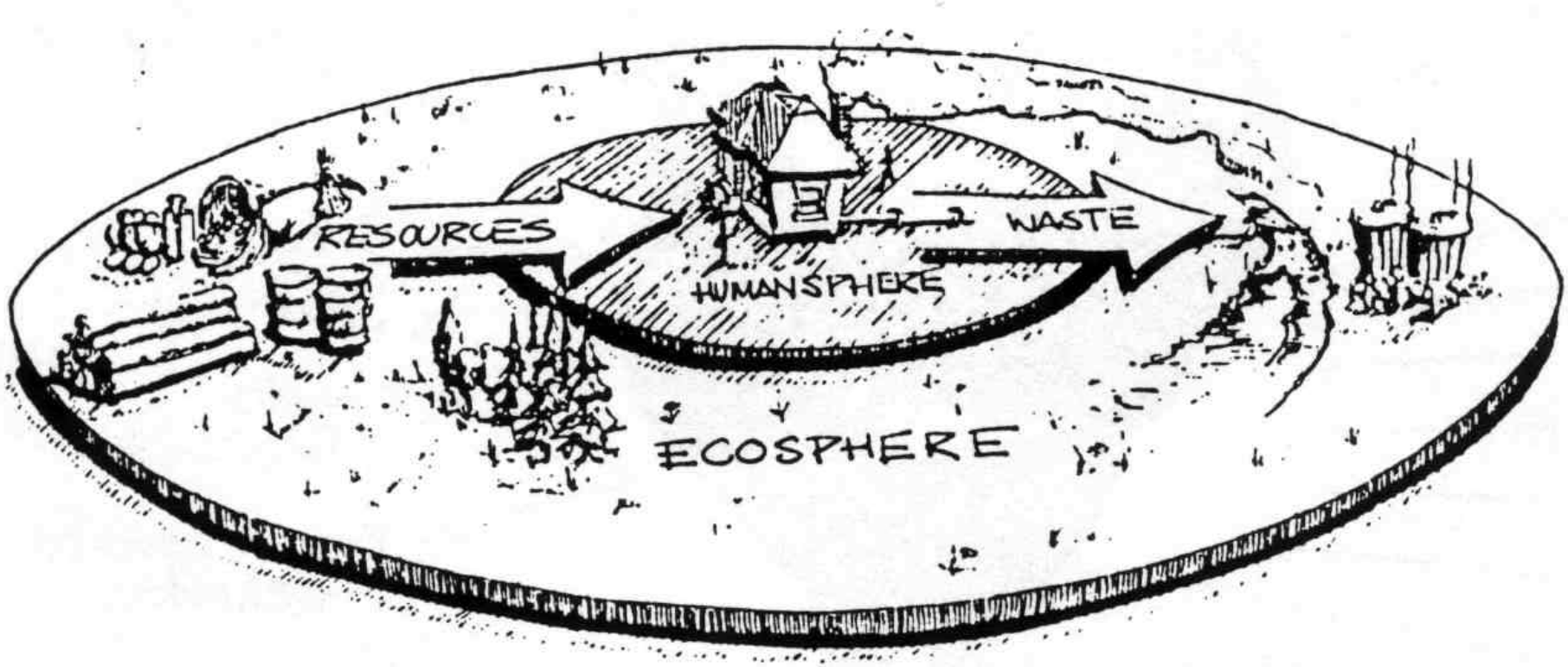
NATURAL STRATEGIES
SUSTAINABLE BUSINESS SUCCESS

ECOLOGICAL FOOTPRINT
REDEFINING PROGRESS



What is the Ecological Footprint?

Human demand on nature…



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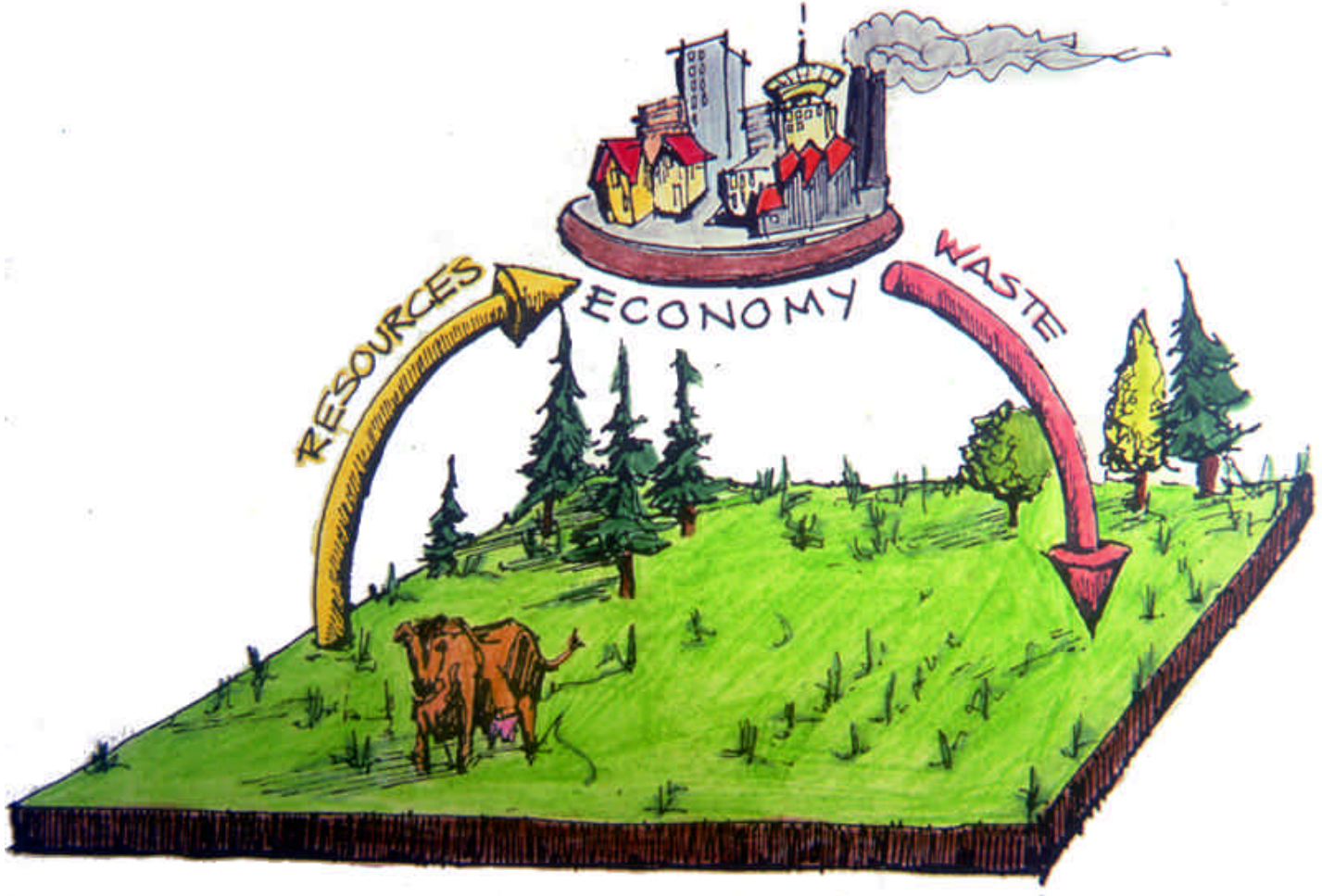
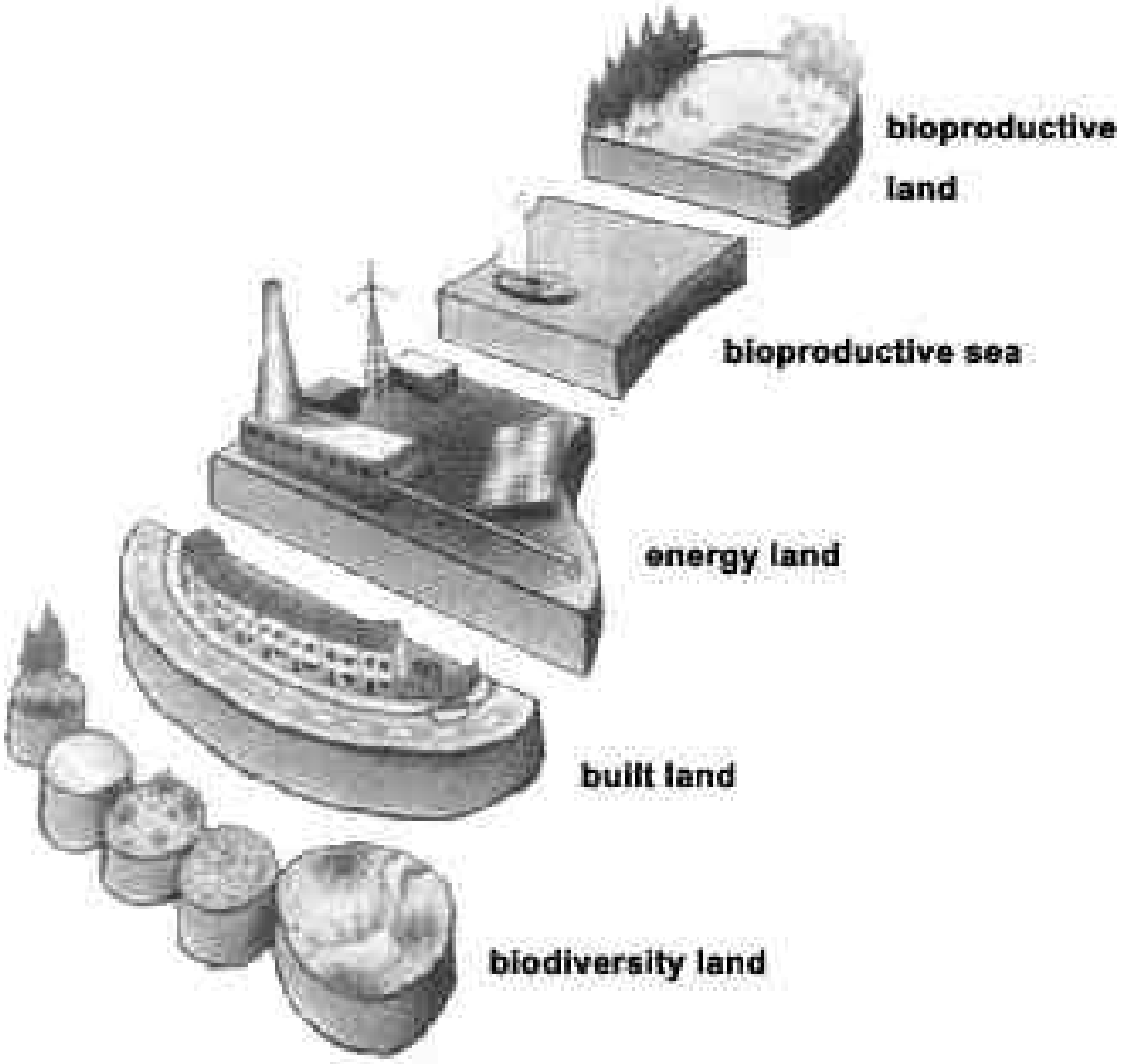
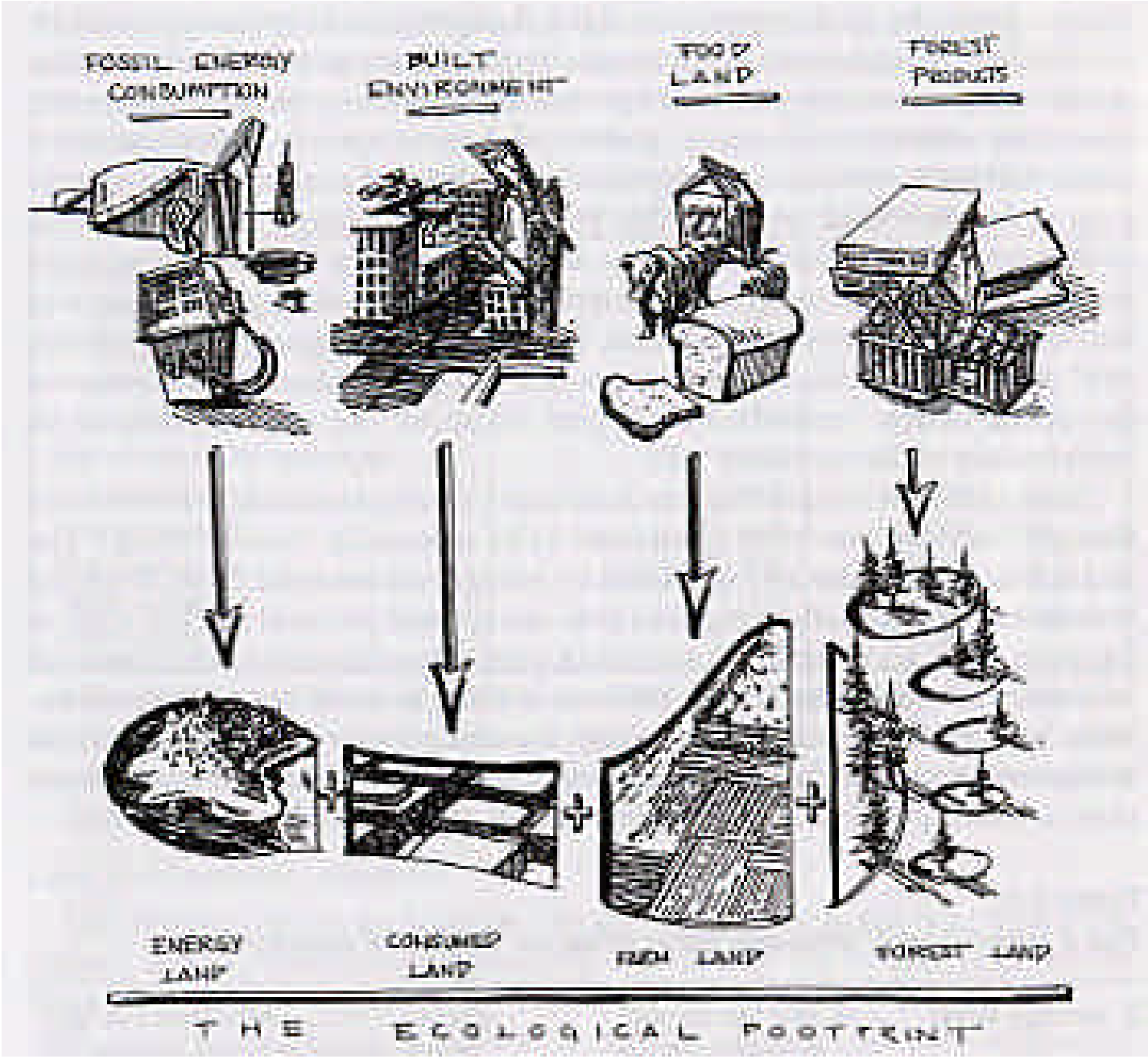
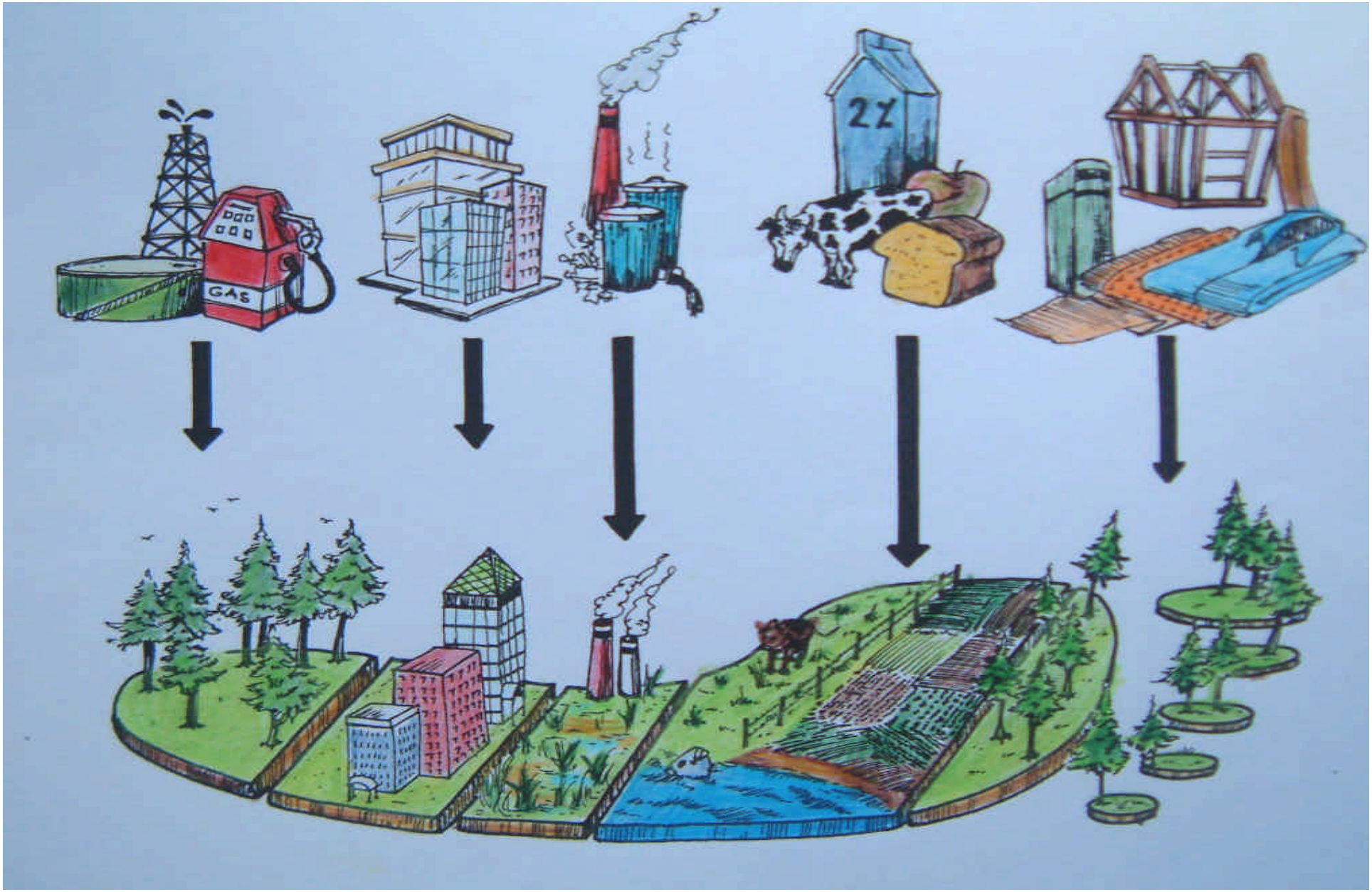


How is the EF calculated?



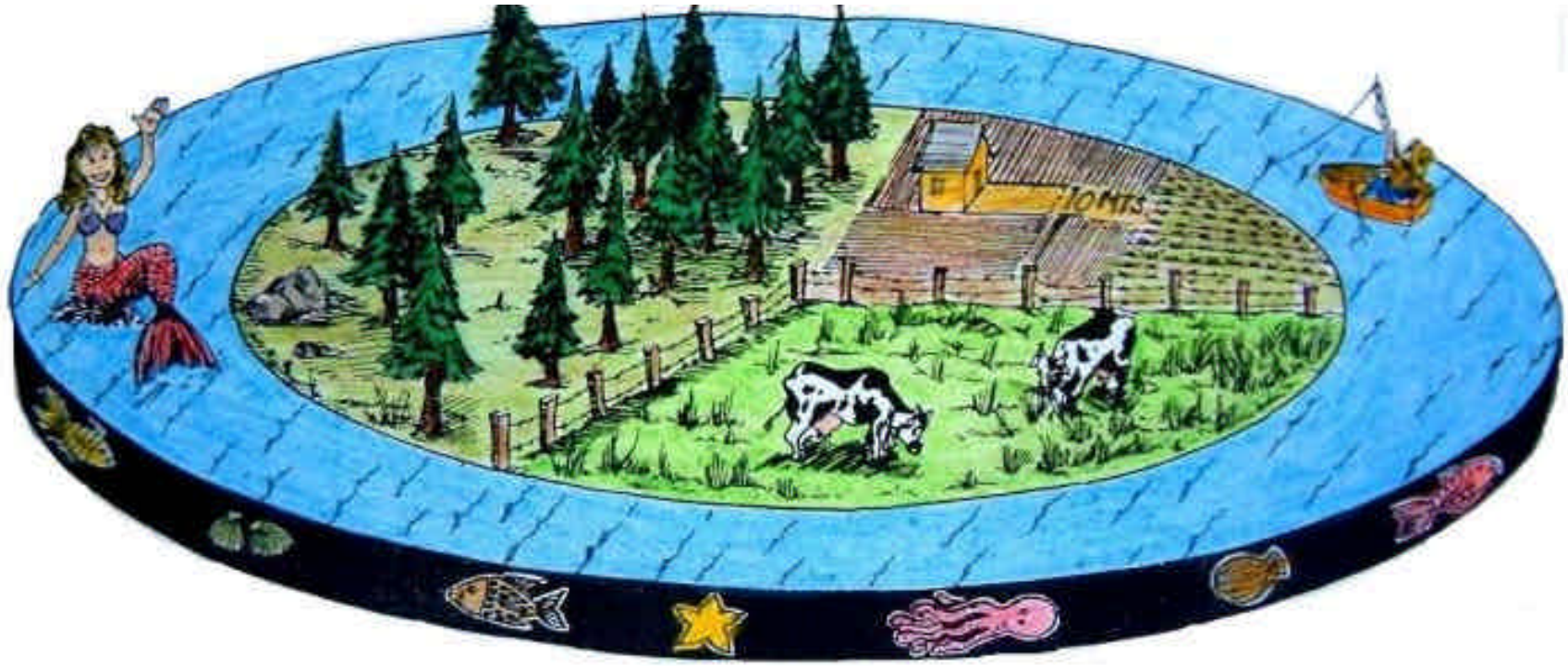
Demand = Land


FOSSIL ENERGY CONSUMPTION
BUILT ENVIRONMENT
FOOD LAND
FOREST PRODUCTS
ENERGY LAND
CROPLAND
GRAZING LAND
FOREST LAND
THE ECOLOGICAL FOOTPRINT



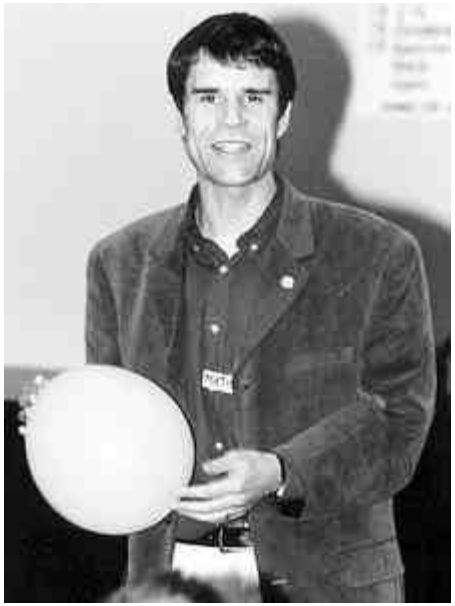
Ecological Footprints add up demand on nature for food, fiber, urban land, waste absorption and energy provision

How much capacity exists?



Land + Sea = 4.5 acres / person

How Big Is Our Footprint?



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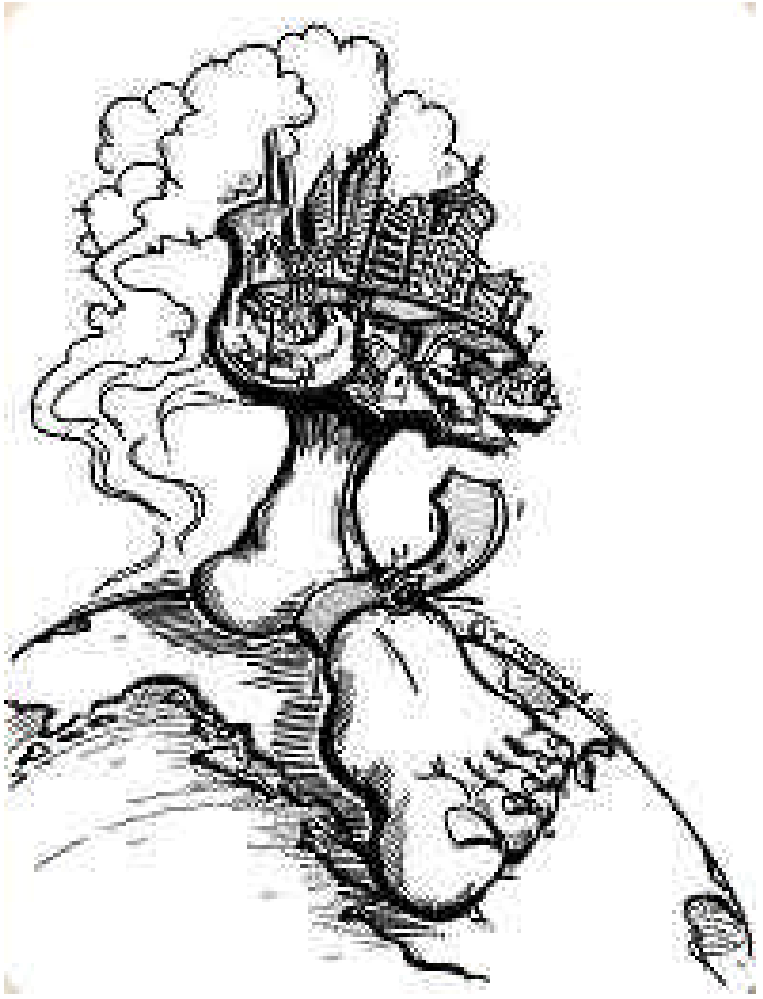
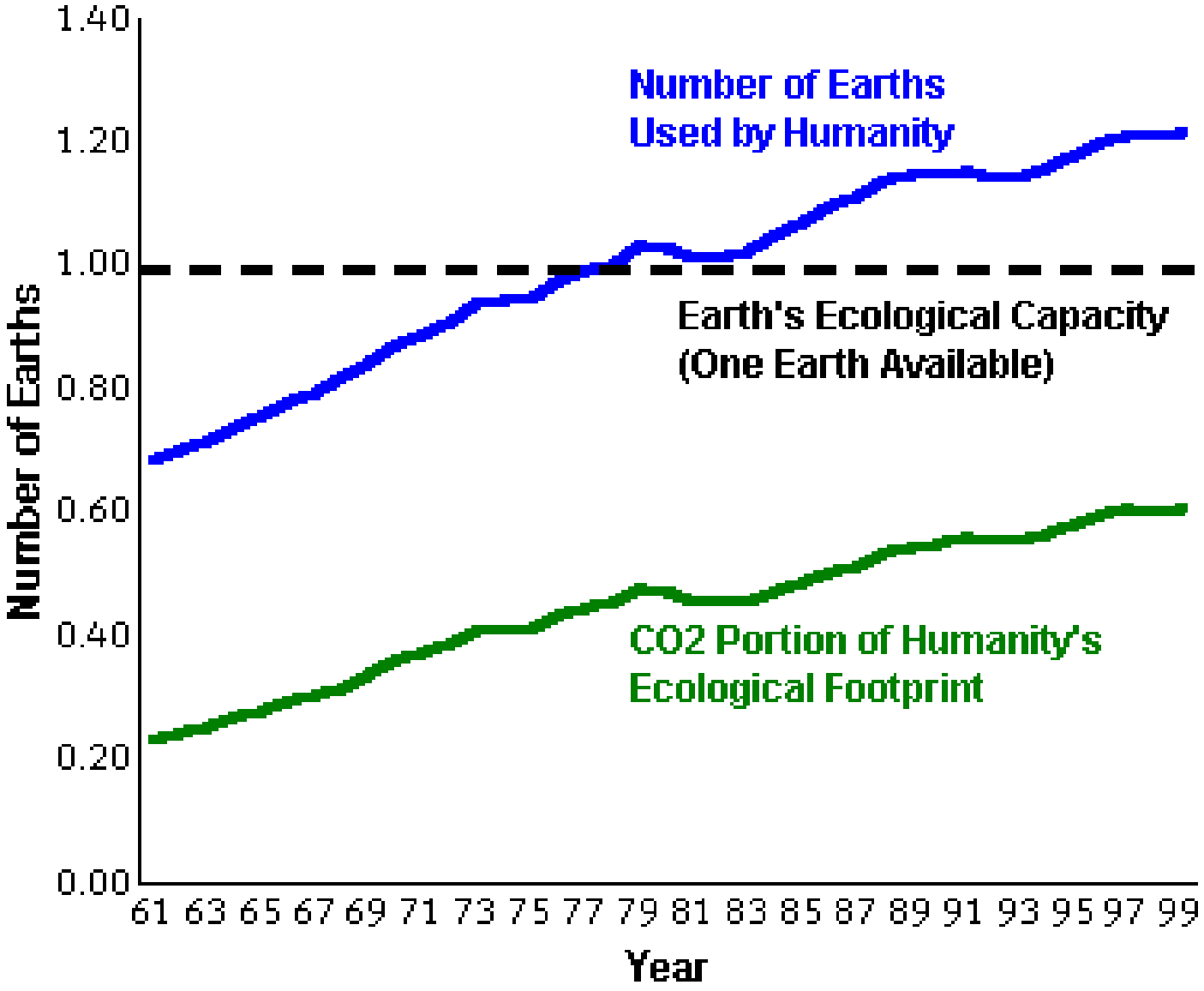


How big…?

…is the the global footprint?

- 2002 Pop. = 6.2 B people in the world
- 2002 Bio-Capacity = 4.5 acres / person
- 1999 Footprint = 5.6 acres / person
- Eco-Deficit = 1.1 acres / person

Consumption Exceeds Capacity



How big is the US Footprint?

- 2002 Population = 288.3 M people
- 2002 Bio-Capacity = 15 acres / person
- 1999 Footprint = 24 acres / person
- Deficit = 9 acres / person

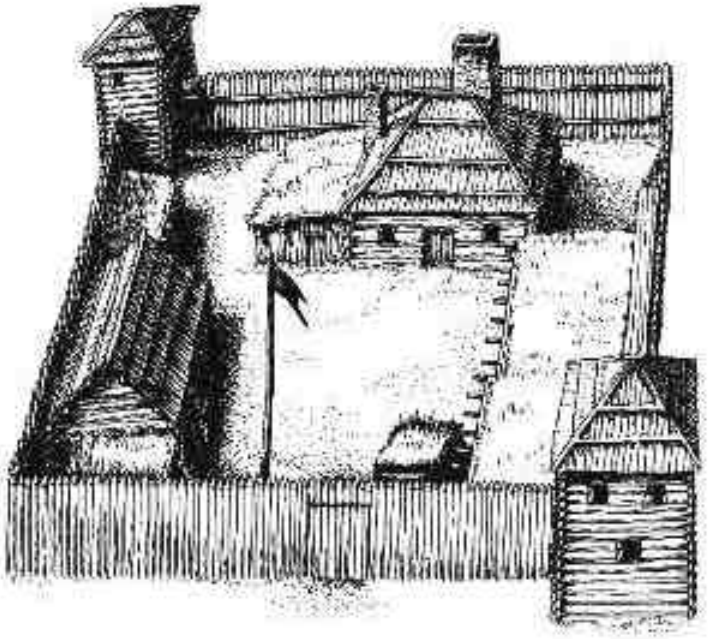
How big is The Army EF?

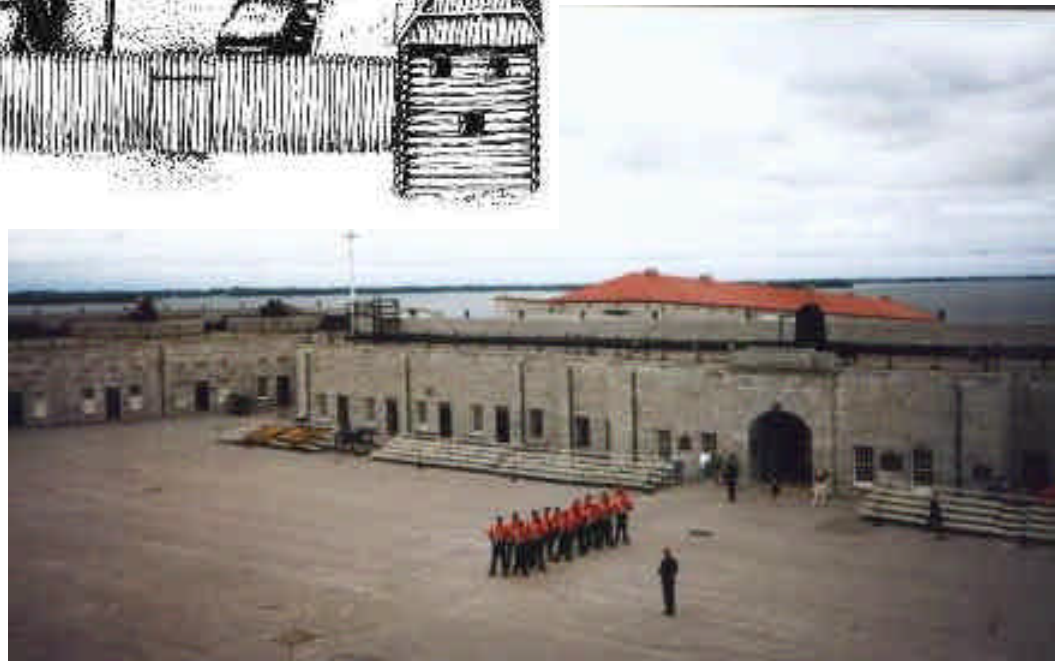
Actual land footprint:

- DoD land = approx. 16M acres
- Army land = approx. 14M acres

Ecological footprint:

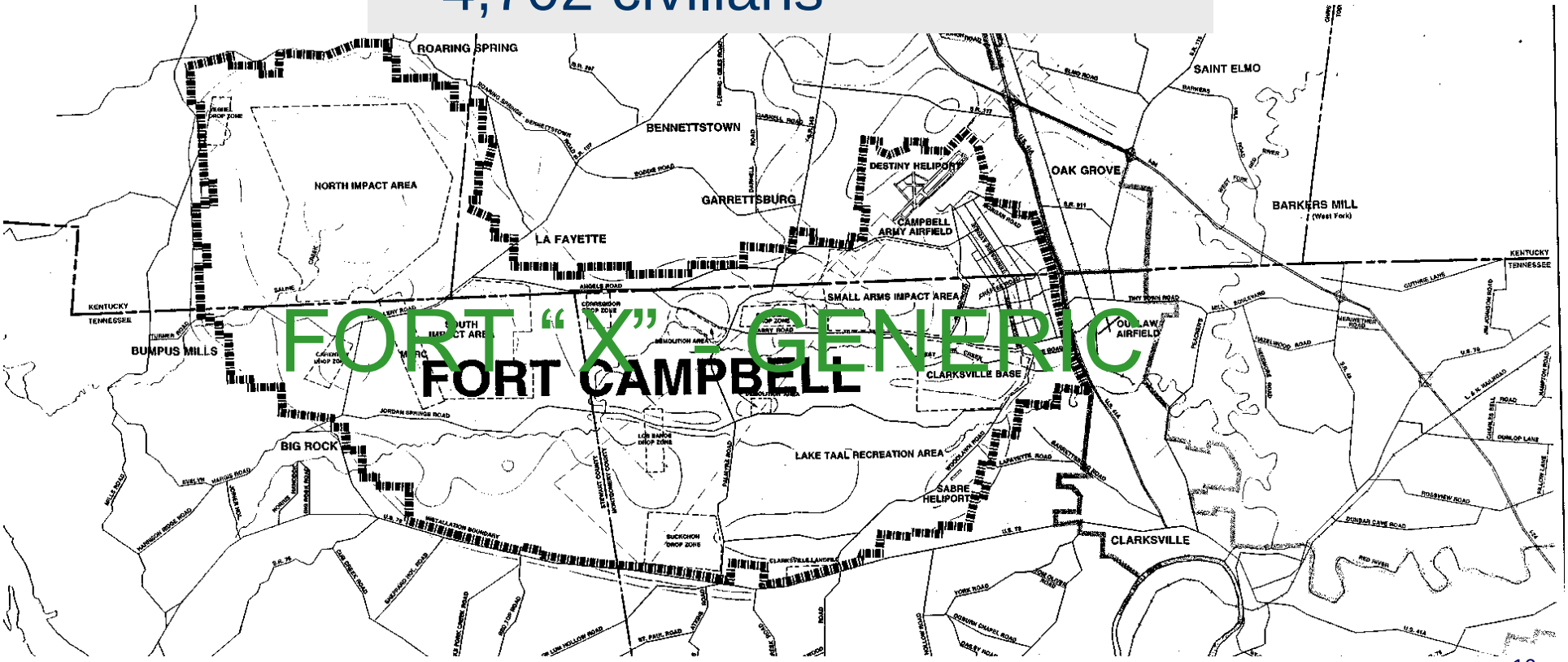
How big is a Fort?





How big is an Army Fort?

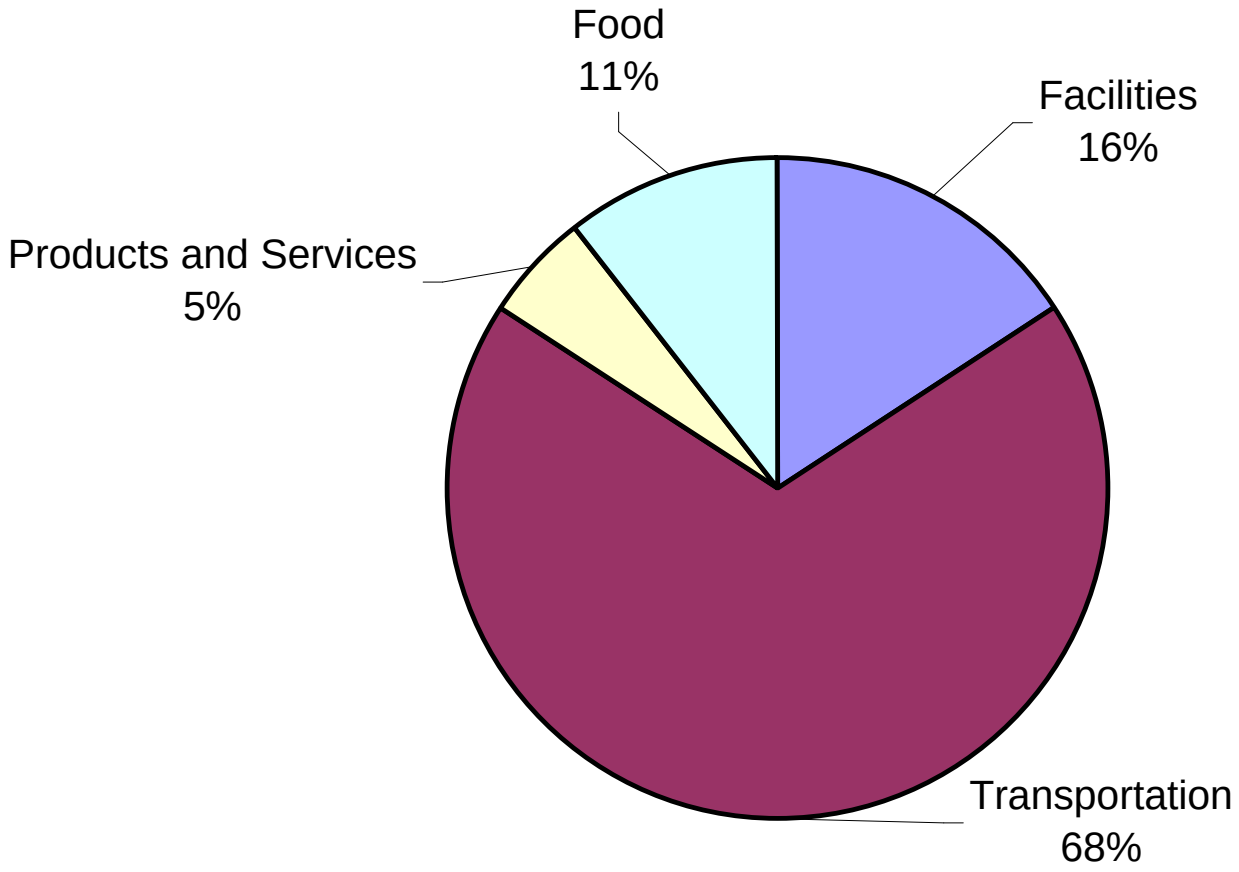
- 105,068 acres
- 24,216 military
- 10,383 family members
- 4,702 civilians



FORT "X" - GENERIC

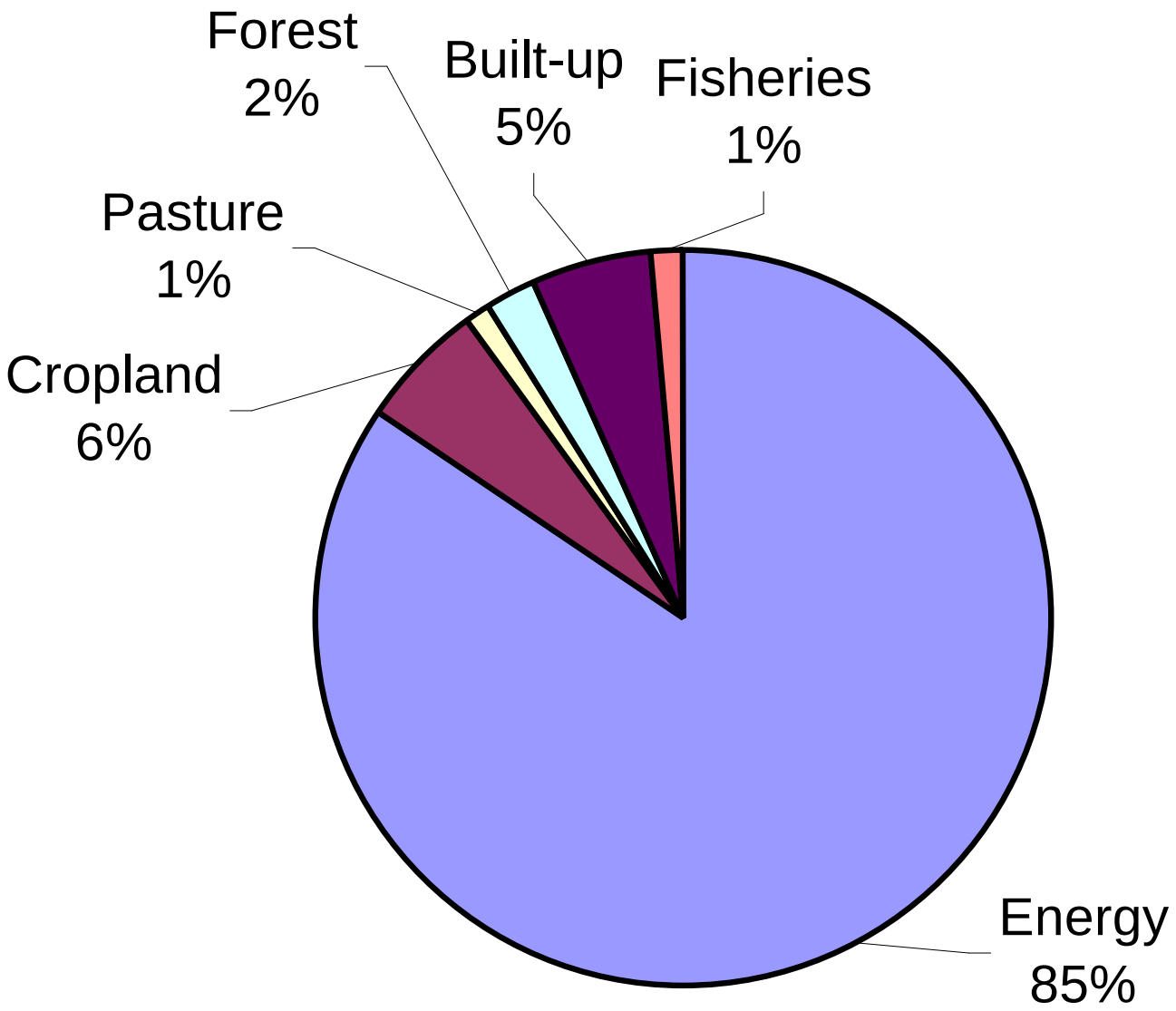
Fort X's Ecological Footprint

1,800,000 acres

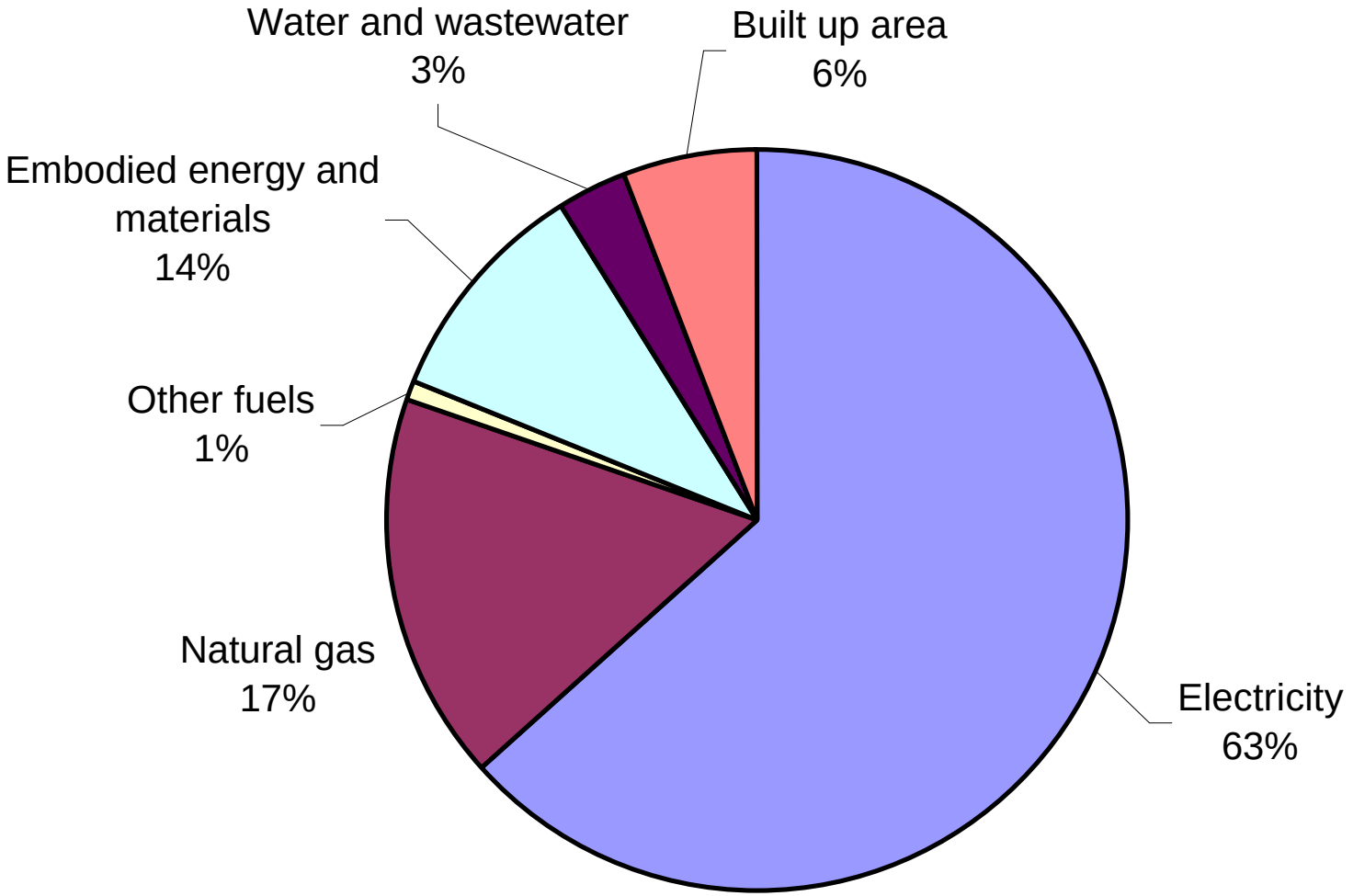


Footprint by Consumption Category

EF by Land Use Category

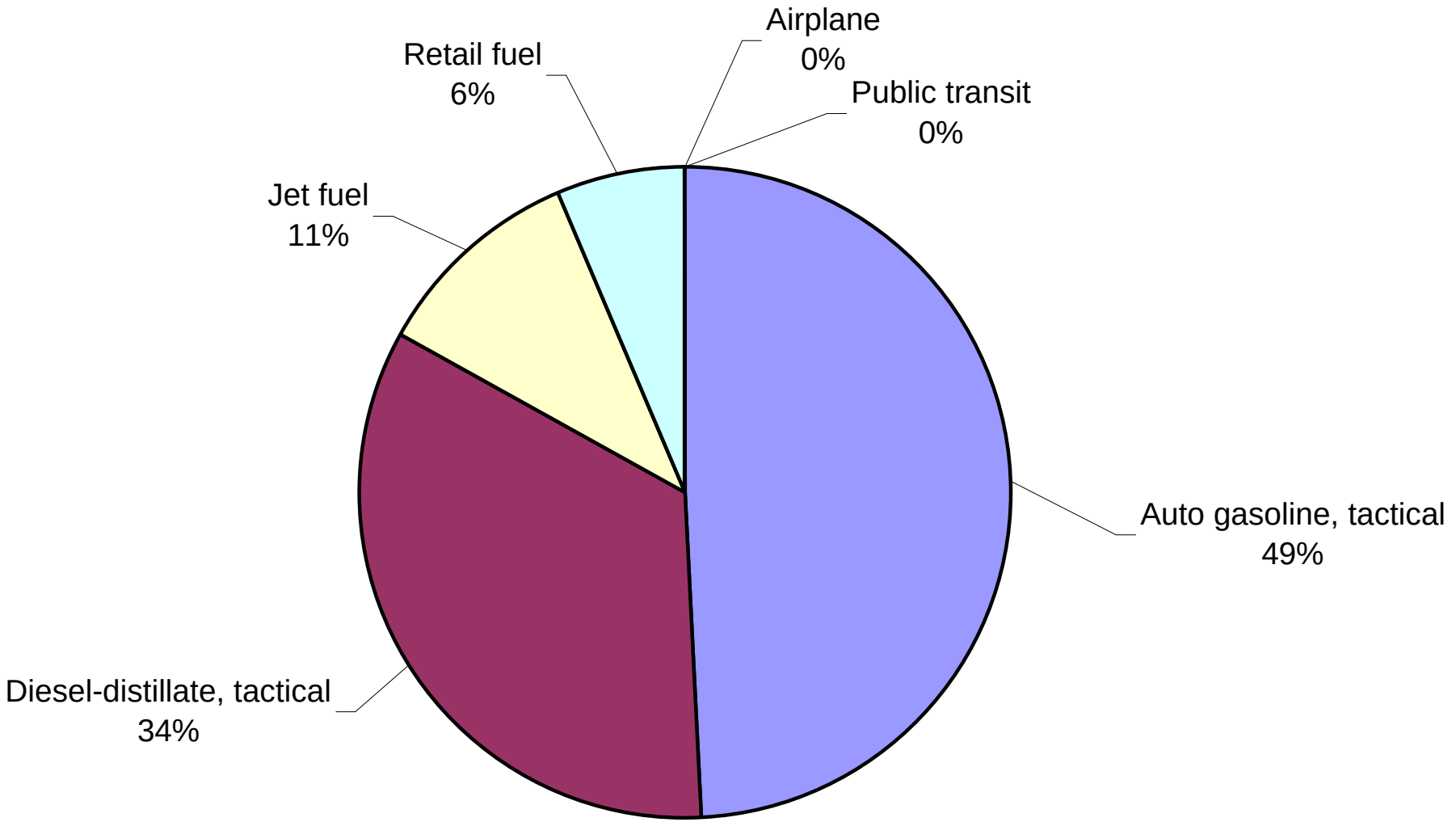


Facilities Footprint



16% of Total Ecological Footprint

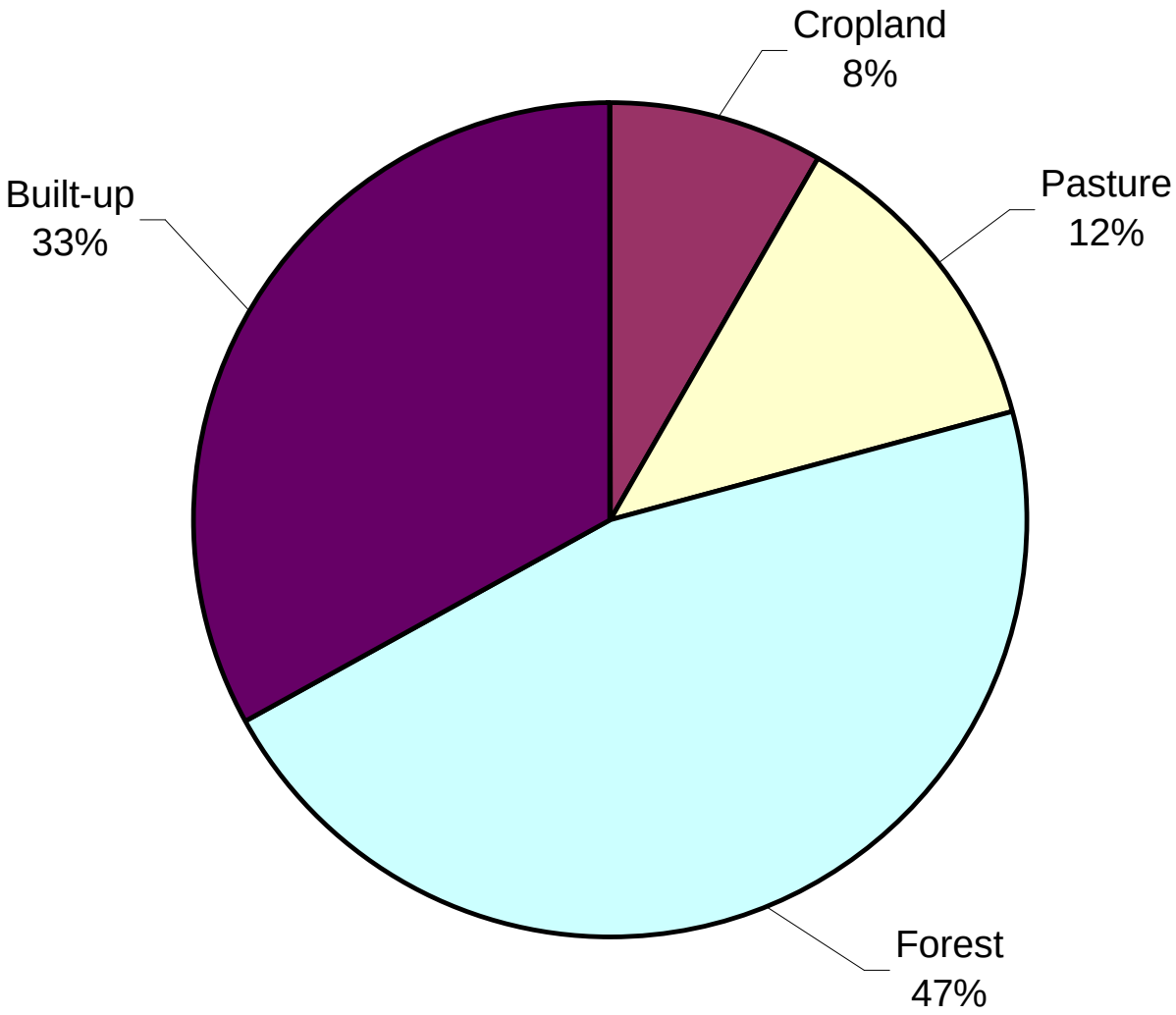
Transportation Footprint



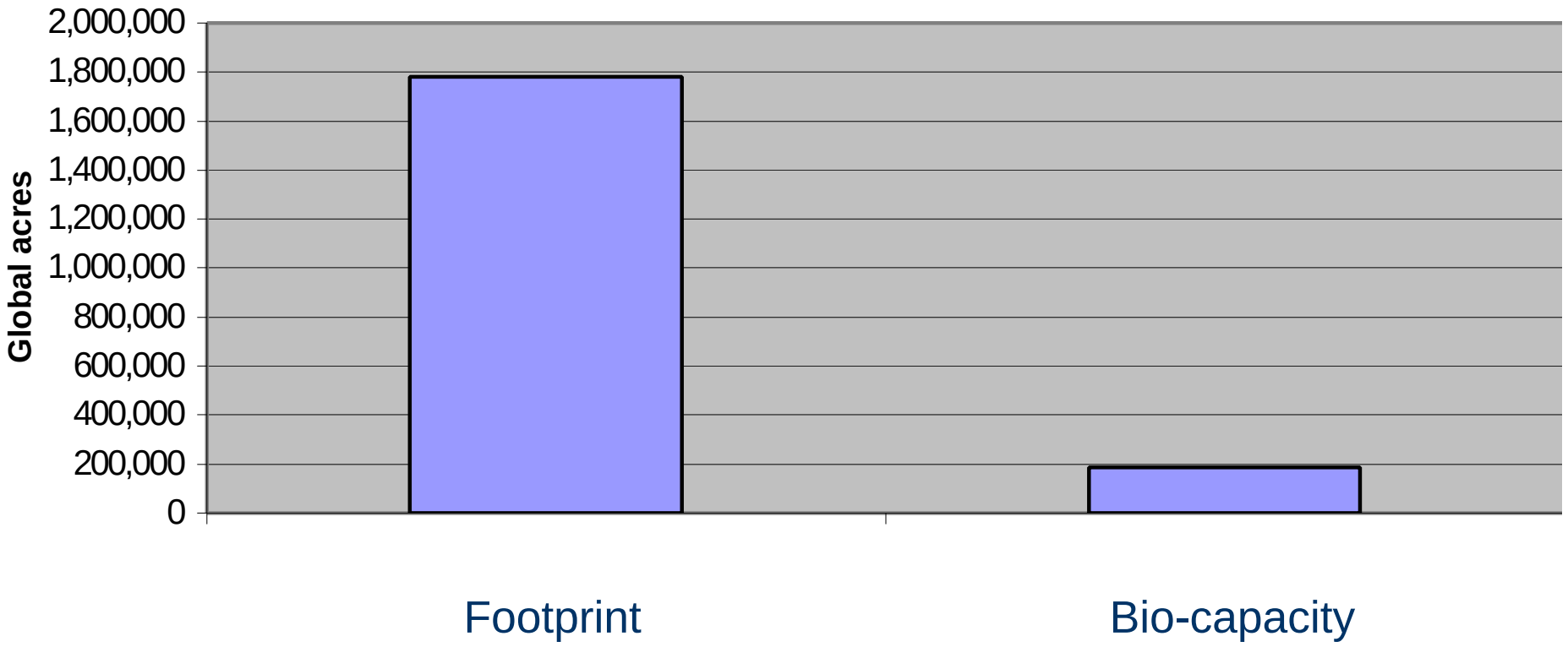
68% of Total Ecological Footprint

Fort X's Bio-capacity

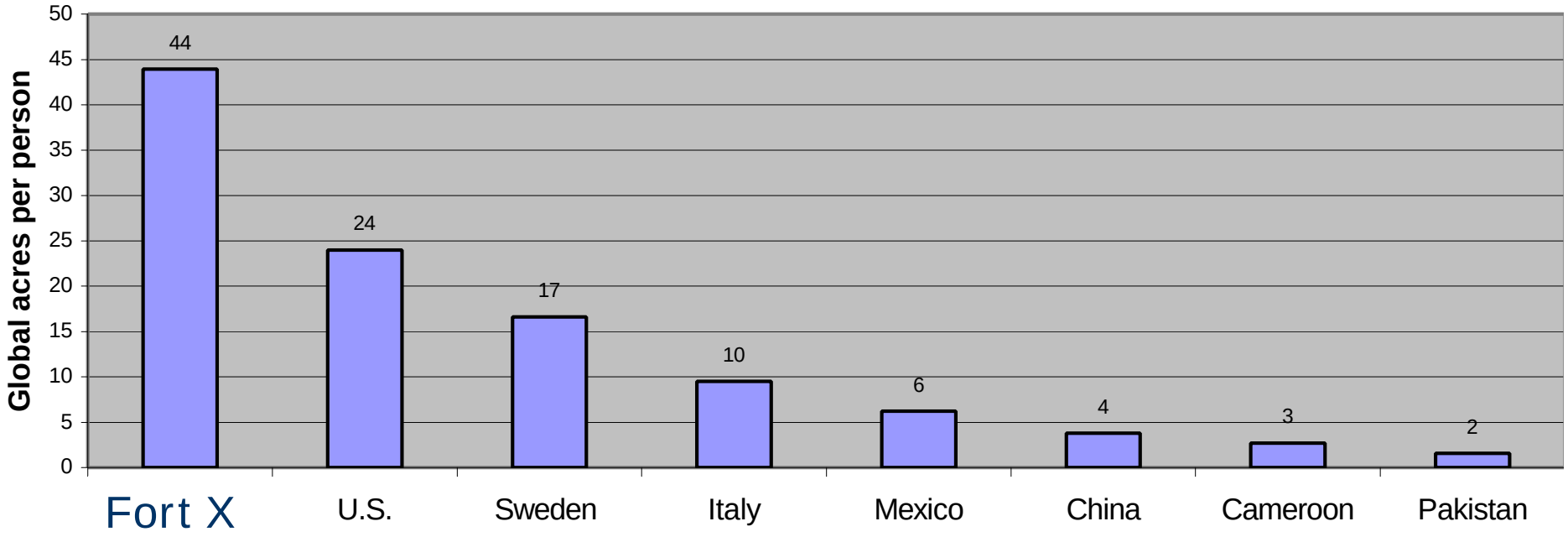
190,000 acres



Footprint vs. Bio-capacity



Fort X in Comparison



Data Availability

- Data gaps exist in the Products and Services and Food categories
- Facilities data are fairly complete, but do not offer detailed information useful in interpreting results.
- Transportation data are complete for tactical vehicles, but leave out portions of personal and commuter travel
- Data not available for commercial air travel or public transport

Observations

- Fossil fuel energy consumption represents the biggest portion of Fort X's Ecological Footprint
- The biggest challenge in reducing its Footprint is with tactical vehicle fuel consumption
- Reduced dependence on coal-powered electricity and electric heating would reduce the energy Footprint
- Transportation to and around post is oriented toward POVs, but alternatives could be implemented
- Sustainable design principles could be incorporated into long-term housing and building plans.

Opportunities

- Organizing Data into a Single Metric
- Bringing Diverse Audiences Together
- Identifying Priorities
- Uncovering Unknown Risks and Impacts
- Tracking progress over time
- Sparking discussion about sustainability

Challenges

- Complete analysis is limited by the availability of data
- More detailed breakdown of some resource flows is needed
- More data exist than could be captured in this pilot study
- Additional data could make assessments more specific and detailed
  - But this requires more effort to gather and investigate new primary data sources
- Additional criteria that need to be taken into consideration for a full sustainability assessment.
  - EFA covers the amount of regenerative capacity necessary to maintain the resource flows on which the installation depends
  - Other criteria include: economic vitality, human health, well-being, and social justice.

Conclusions

- EFA process could be streamlined and standardized for Army-wide application
- Several issues need further research to improve accuracy and completeness of EFA
  - Products and services data and conversion factors
  - Waste footprints and diversion credits
  - Carbon sequestration credits
  - Embodied energy and materials (more specific data)
  - Water footprints to capture quantity and quality of use
- Baseline data for sustainability planning and EMS implementation could feed EFA process
- EFA results may help focus and prioritize data collection on high impact areas
- EFA templates could be web-based to allow each installation to input data and generate results

Questions?

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