Natural Resources

Renewable and non-Renewable Resources uses and their Issues
Natural Resources

• Naturally occurring materials that humans view as necessary/useful for its economic/material well-being
  – Renewable
    • Can be replenished in a human lifetime
  – Non-renewable
Resource Collection

• Two classifications:
  – Gathering industries
    • Harvesting of renewable resources
  – Extractive industries
    • Removal of non-renewable minerals
Resources

Renewable
- Solar Energy
- Air, Wind
- Water, Tides, Flowing
- Soil, Plants

Nonrenewable
- Fossil Fuels
  - Oil
  - Coal
  - Natural Gas
- Metallic Minerals
  - Iron
  - Copper
  - Aluminum
- Nonmetallic Minerals
  - Salt
  - Phosphates

C. Ophardt c.1998
Fishing

• Primary Sector of the Economy
• Renewable resource?
• Major resource
  – 75% of world catch = human consumption
    • 1 billion people rely upon this resource
  – 25% = processed fish meal for livestock/fertilizers
Fish Harvesting

• 120 million tons harvested worldwide per year
  – Maximum sustainable yield is exceeded

• Sources
  – Inland catch
  – Fish farming
  – Marine catch
Fish as a Renewable Resource?

Plenty More Fish in the Sea?
Biomass of Popularly Eaten Fish

in 1900

in 2000

Design: David McCandless // Map render: Gregor Aisch
source: Hundred year decline Of North Atlantic predatory fishes, V Christensen et al, 2003
Common Usage

• Accepted view that world’s oceans are common property and open to all
• No one is responsible for its maintenance, protection, improvement
  – Each user exploits before someone else can
Response

  • Gave control of 200 nautical miles to nearest country
• Increasing fish farming
  • Aquaculture – both marine & freshwater
South China Sea Problem
Forestry

• Primary sector of the economy

• Renewable resource?
  – 12,000 years ago forest covered 45% of earth
  – Today forest only covers 30%

• Two large global belts of commercial forests:
  – Upper-middle latitudes of the Northern Hemisphere
  – Equatorial zones of South & Central America, Central Africa, Southeast Asia
Major Commercial Forestry Zones
Forestry Threats

• Threats to global forests
  – Acid rain, Atmospheric pollution, over harvesting, invasive species, slash-and-burn agriculture, Fires

• Forestry Protections
  – Conservation/Reforestation, Government Regulation
Threats to Forests

• Northern forests
  – 45% of timber is for industrial use
• Southern forests
  – 55% of timber is for fuel wood/charcoal use
  – Expensive mahogany extraction
    • Often at expense of other flora
• Forest depletion
  – Loss of a renewable resource
  – Conversion to agricultural lands
  – Economic/ecological implications

CAUSES OF DEFORESTATION IN THE AMAZON, 2000-2005

- Cattle ranches 60%
- Small-scale, subsistence agriculture 33%
- Fires, mining, urbanisation, road construction, dams 3%
- Logging, legal and illegal 3%
- Large-scale commercial agriculture including soybeans 1%

SOURCE: Mongabay.com
Amazon Rainforest Depletion
Fur Trapping

• Dependent on northern forests
• Anti-fur campaigns began in 1960s
  – Challenged for inhumane treatment of animals
  – Banning of fur products
• Farmed furs are 85% of industry today
Poaching

- Illegal hunting of animals
  - Especially big-game and exotic animals
- Black market trade
  - Ivory
  - Furs
  - Animal parts
Mining and Quarrying

• Primary sector of the economy
  – Distribution is uneven, determined by past geologic events
    • Ease of access to materials
• Extraction is possible with technology
  – Deeper materials require more technology for extraction
Metallic Minerals

- Most important Copper, Lead, Iron ore
- Most abundant locations:
  - Russia, Canada, China, United States, Brazil, Australia
- Production is balanced by:
  1. Quantity available
  2. Richness of ore
  3. Distance to markets
Non-Metallic Minerals

• Most Common are sand/gravel, gypsum, limestone, building stone

• Two types of usage:
  – Construction use (ingredients for cement)
  – Fertilizer use (potash, phosphate)
Mineral Fuels

• Fossil fuels
  – Made industrial revolution possible
  – Non-renewable
    • Coal, Petroleum, Natural gas
Coal Mining

- United States, China, Northern Hemisphere
- Open-pit (surface mining)
  - Very damaging to environment
- Shaft mining
  - Expensive, more dangerous
- Very polluting – slag heaps, ecosystem destruction
- Bulky to move
Natural Gas

• 25% of global energy consumption
• Popular due to:
  – Highly efficient, versatile
  – Requires little processing
  – Environmentally safe
• Problems:
  – Uneven distribution
  – Difficult to move
  – Limited supply
Petroleum/Oil

• 75% of proven reserves in just 7 countries
• Usage boomed in 20\textsuperscript{th} century
• Costs & effects:
  • Cheaper & easier to move than coal
  • Polluting – global warming
  • Reserves are diminishing
  • Due to distribution & lack of availability – market value fluctuations, politically sensitive