



Transportation Technology

Transportation by land, sea, and air:

-water transportation: by boat not feasible in the northern Arctic because Arctic Ocean freezes

-land transportation: by rolligon, hovercraft, snow-mobiles, roads

-air transportation: by helicopter, plane

-rolligons: out of proportion big tires to distribute the weight over a larger area, decreases pressure on ground to around 3psi; max payload 30 tons; max speed around 20mph

-hovercraft: use fans to push air under the vehicle, then uses a skirt to trap the air under and prevent it from dissipating, therefore pushes the vehicle up; only contact with ground due to skirt contact, which can tear up vegetation; minimal ground contact decreases friction and increases efficiency; documented hovercrafts passing over bird eggs and small rodents without inducing physical injury; payload of up to 160 tons, maybe more; can be disassembled for travel and reassembled for use; noise pollution inevitable; designed so that in case of massive skirt failure, air still leaks out relatively slowly and therefore provides a soft landing (just now a LOT of pressure); can be very big vehicles: about the area of entire rooms/buildings for equipment transportation; also can be very small vehicles: personal/passenger hovercraft; amphibious, can be used on land, liquid water, mud pits, melting snow; however only suited for flat terrain...can't push itself up steep slopes

-snow-mobiles: as in conventional snow mobiles, not special equipment like rolligons/hovercraft; requires lots of snow to be environmentally friendly, but many can be used on roads without damage to the vehicle; 2 types: tired and traction-ed vehicles; consumes diesel

-roads:

- gravel: more vegetation around edges of gravel roads, attracts animals; roadkill????; require acquire gravel from riverbeds/outside sources; stays through the seasons, can but doesn't get cleaned up; in non-winter seasons, directly laid on tundra

-ice: require about 1.5 million gallons of water pre mile of 40 ft wide 6 in thick ice road; lots of water, where to get it? melts with the warming of seasons, non-permanent, needs to be rebuilt every year; also ice airstrips and ice pads

-diesel fuel: new ultra low sulfur fuel to decrease the amount of particles given off, therefore decrease pollution....already being adopted by state of Alaska

-airplanes: focus on military aircraft C-130's: can travel in hurricanes/carry 20 tons, minimum range of 2,350 miles, average cost (in 1999) \$44.1 million; very large and very stable, equipped with ski's to land on snow and ice, equipped with tires to land on runways; previously deployed to the Antarctic; more stable and more efficient to fly than helicopters

-helicopters: Sikorsky Skycrane (~10 ton load), Chinook CH-47F (~13 tons), and the Skyhook Super Stallion(~16 ton load); compared to planes: flies lower, makes more noise???, less efficient; may land directly on frozen tundra; if helipad needed, size of helipad would be considerably smaller than size of landing strip for airplanes

