2. Energy Transfers and Energy Resources

4.1 (units)

- kilogram (kg)
- joule (J)
- meter (m)
- meter per second (m/s)
- meter per second squared (m/s^2)
- Newton (N)
- second (s)
- watt (W)

4.2

Energy Stores:

- chemical
- kinetic
- gravitational
- elastic
- thermal
- magnetic
- electrostatic
- nuclear

Energy transfers

- mechanically
- electrically
- by heating
- by radiation (light & sound)

4.3

conservation of energy

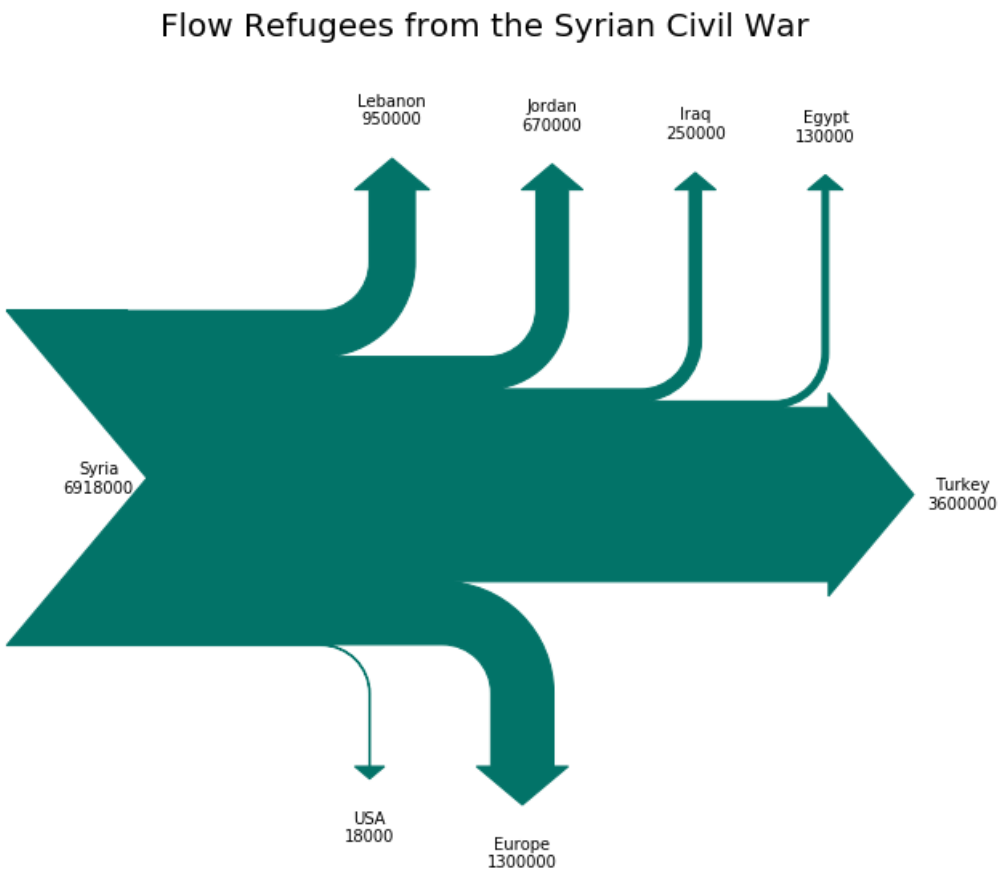
Energy Can Neither Be Created Nor Destroyed, only transferred

4.4

Efficiency = (useful energy output)/(total energy output) x 100

4.5

Sankey diagram

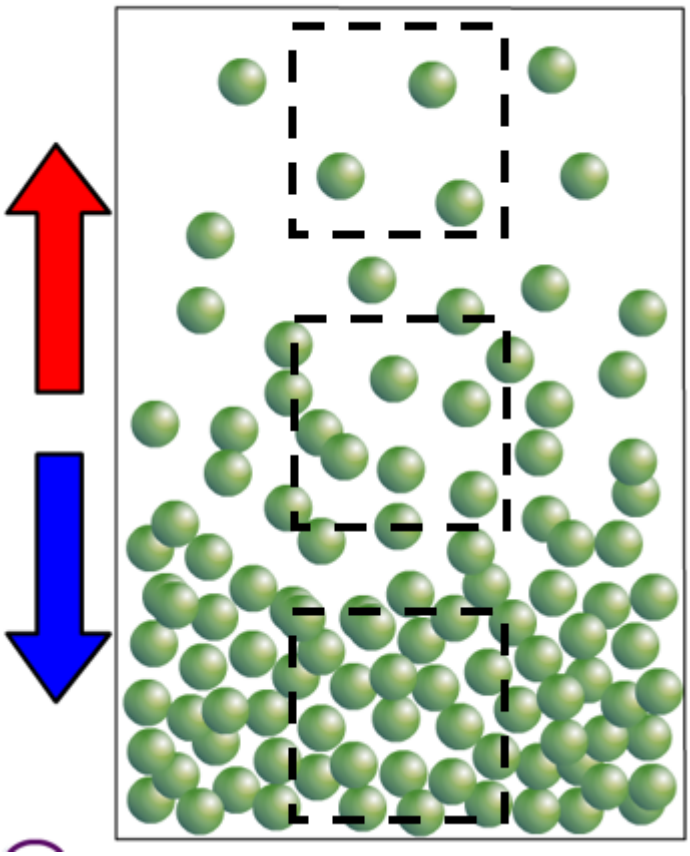


4.6

Thermal energy transfers

- conduction (contact only with solids)
- convection (circulation in fluids)

- radiation (waves)



4.7

Convection in everyday

- fridge
- kettles

4.8

4.10

Insulation allows reduction of unwanted energy transfer

4.11

work done = force x (distance moved)

W = F x d

4.12

Work done = energy transferred

4.13

(gravitational potential energy) = mass x (gravitational field strength) x height

4.14

Kinetic energy = 1/2 x mass x speed ^2

KE = 1/2 x m x v^2

4.15

Gravitational potential energy is inversely proportional to kinetic energy

4.16

Power is the rate of transfer of energy or the rate of doing work

4.17

power = (work done)/(time taken)

P = W/t

4.18

Forms of electricity of generation:

- wind
- water
- geothermal resources
- solar heating systems

- solar cells
- fossil fuels
- nuclear power

4.19

advantage and disadvantage of large scale electricity production from renewable and non-renewable resources