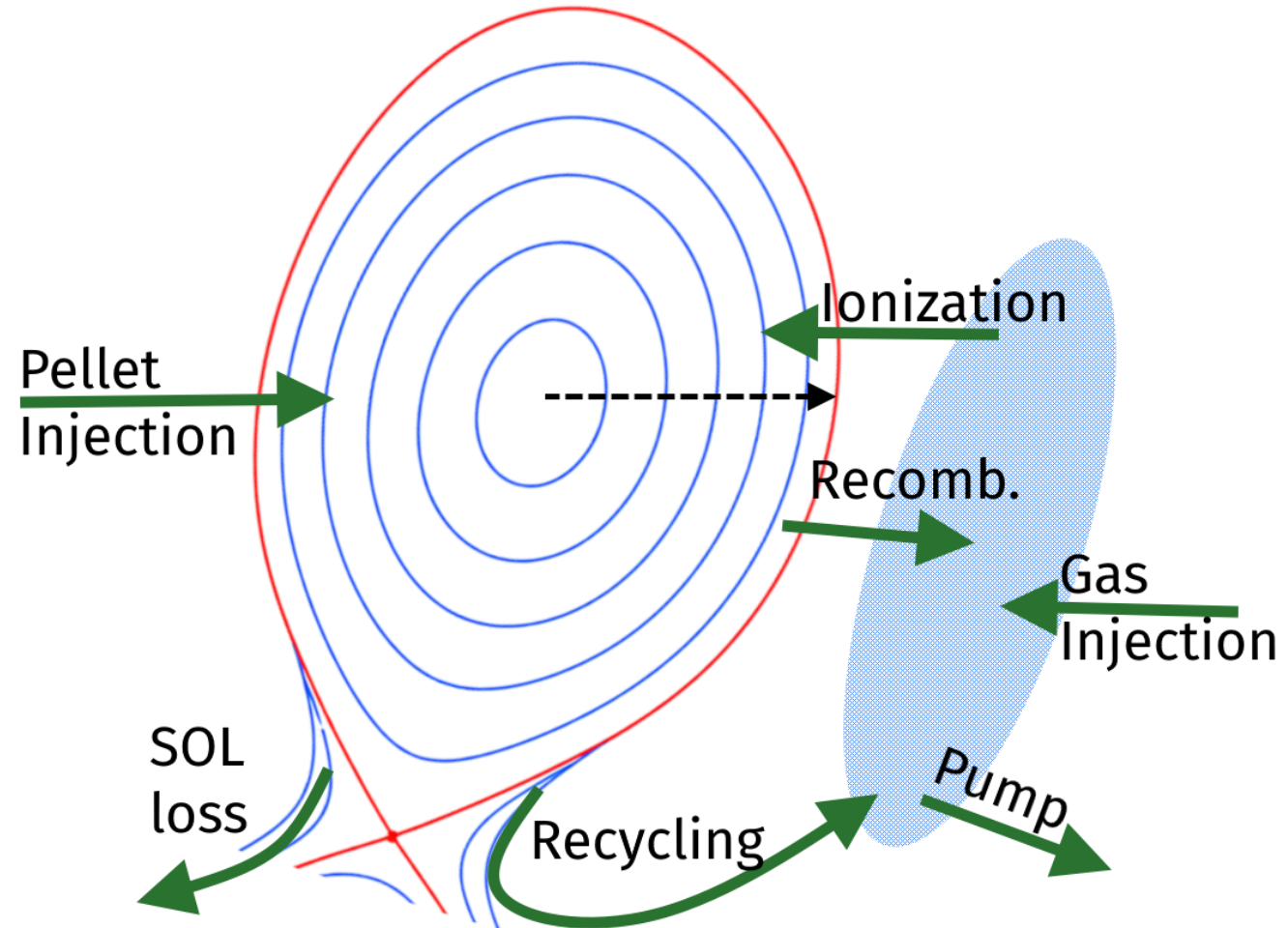


# What is ITER and why do fuel it?

- ▶ World's largest fusion experiment  $\sim 100 \text{ m}^3$ 
  - $\text{D}_2$  &  $\text{T}_2$  fuel the fusion reaction
- ▶ Fueling control coordinates  $>60$  gas & pellet actuators
- ▶ Multiscale problem: gas = slow & edge-dominated, pellets are fast & core-dominated
- ▶ Requires integrated MATLAB/Simulink + PCSSP framework
  - Controller logic, actuator management, plant models, plasma response, & limit calculations



# The ITER fueling architecture

## ► Simplified controls diagram

