

Benchmark I

This year the CIF topic is “Nuclear Issues in Northeast Asia.” In order to begin to understand this topic your first two tasks will be to investigate and comprehend both nuclear energy and nuclear weapons. Your third task will be to investigate and understand what kind of nuclear related activities each of the Asian players is involved in. In your research you will examine the objectives from the point of view of the scientific & environmental; social & cultural; economic; political & geopolitical domains to gain a comprehensive understanding of nuclear energy and weapons.

Objective 1: Arrive at a working knowledge of how various nuclear processes work. Investigate and report on “fission,” “fusion,” and “transmutation.”

Suggested activities:

- 1) Create a pictorial representation of each process.
- 2) Identify the isotopes of which elements can undergo fission. Do the same for fusion.
- 3) List the products of both the fission or fusion reactions.
- 4) Make a diagram of the process of transmutation of uranium into plutonium.

Objective 2: Explain the differences between peaceful and military applications of nuclear technology.

Suggested activities:

- 1) Produce a color diagram of the nuclear fuel cycle. In one color, show the parts of the cycle related to nuclear weapons. In another color, show where fissile material for weapons could be diverted.
- 2) Compare and contrast the types of nuclear reactors and explain the concerns of each for nuclear weapons proliferation.
- 3) Identify the different types of nuclear weapons and explain how they work.
- 4) Map the results of the use of nuclear weapons (blast, heat, radioactivity, etc) giving historical or hypothetical examples. Describe the effects of each result on humans and the environment.
- 5) Describe other environmental effects of the use of nuclear technology. Consider waste disposal, accidents, reduction in pollution, etc. Give examples, preferably from the Asian region.

Objective 3: Research and report on the civilian and/or military uses of nuclear technology in one or more of the following: China (PRC), Japan, North Korea (DPRK), South Korea (ROK) or Taiwan (ROC).

Suggested activities:

- 1) Describe the civil and military nuclear capabilities of each party in the region.
- 2) Create a map showing the known or suspected nuclear facilities for each party.
- 3) Create a chronology of each party’s nuclear development.
- 4) Explain how each party obtained their capabilities.
- 5) Investigate the economic costs and benefits of nuclear energy in one or more of the parties.
- 6) Determine how IAEA safeguards account for nuclear materials and help assure compliance with nonproliferation obligations.