

BENCHMARK I

The purposes of Benchmark I are to consider the motivations and the “resources” (physical and intellectual) a nation needs to pursue a nuclear weapons policy.

The leaders of any country must first “want” to have nuclear weapons. Next, they must be able to justify that “want” to their own citizens and they must try to justify their decision to the world community.

Finally, they then must have the necessary scientific, technological, industrial, and economic abilities to carry out the development, testing, and production of those weapons.

Your task is to examine decisions that have been made, or that are being made, by various nations in the world today to develop nuclear weapons. You are to analyze these decisions in the context of nuclear proliferation, nonproliferation, and counter proliferation.

Research and gather data within the context of the four domains (scientific/environmental, economic, social/cultural, and political/geo-political) that help you to build an understanding of the motivational and infrastructure issues behind a nuclear weapons effort.

Objective I - Motivations:

You are to produce an overall analysis and definition of the motivations that drive current decisions being made by leaders in nations of the world to pursue a nuclear weapons capability. Select two or three nations for this study.

Suggested Activities:

1. Define, compare, and contrast the types of nuclear weapons.
 - a. What materials do they use and why?
 - b. How are they built?
 - c. How do they work?
 - d. What kind of industrial infrastructure is needed to produce each?
 - e. Make a model (schematic) of your bomb and attach an addendum summarizing how and where you will obtain needed materials.
2. Develop a chart or a database identifying various nations and their nuclear capabilities. Include a) all Nuclear weapon states, b) as many nuclear capable states as you can identify, and c) a sampling of non-nuclear states. Tell what each nation is or is not capable of doing.
3. Think about a neighborhood. In this neighborhood for many years there were no guns. Recently, some homeowners have acquired guns; others have not. Who do you think feels unsafe and why? Would it be better for no one to have guns? For everyone to have guns? For some to have guns and others not to have guns? If it would be best for no one to have guns, how would you take them away from those who do have them? If it is best for only some to have guns, how do you determine who those “some” are?
4. Consider the following scenario:

- a. As part of the political process in a country, an election for the head of state is coming up this year. The two main candidates are on opposite sides of the nuclear issue. As a part of the campaign each side's management team must come up with a position on the following questions:
 - i. What is the world's perception of the nuclear powers?
 - ii. Is nuclear status a determinant of great power status?
 - iii. What power does a nuclear state really have?
 - iv. Do we need nuclear weapons?
 - v. What responsibility do we have to non-nuclear states?
 - vi. What are the benefits for our nation of being nuclear? What are the risks?
 - b. Now, prepare campaign materials such as brochures, bumper stickers, position papers, and TV and newspaper ads defining your side's ideas on the future of your nation's nuclear program. Refer to the four domains.
5. Your firm has been hired as consultants to a government that is considering developing nuclear weapons. You must prepare a report on the impact of developing nuclear weapons. You must answer the following questions:
- a. Why would a country want nuclear weapons?
 - b. Why have some nations with the capability chosen not to develop nuclear weapons (like Japan, Germany, Switzerland, Argentina, Brazil) and others to arm and then disarm themselves (like South Africa)? How should a government considering nuclear weapons view these decisions?
 - c. What might motivate a country to change direction and begin a nuclear weapons program?
 - d. Would the world be a safer place if no nation had nuclear weapons? If all nations had nuclear weapons? What would be a realistic goal, and why?
 - e. What would be considered a reasonable number of weapons for the US and Russia to maintain? For China? India? Pakistan? How should a government considering nuclear weapons view these numbers?
 - f. Should North Korea or Iran have any? Some? If these two countries develop nuclear weapons, how would other countries react? Again, How should a government considering nuclear weapons view the answers to these questions?
 - g. How will nuclear weapons affect the international status of a country? Can a country truly be considered a great civilization today without having nuclear weapons?
 - h. How could a nation's nuclear capabilities be exploited within the framework of existing treaties and current power structures?

Objective II – Physical and Intellectual Resources

Once the leaders of a country have determined that they will develop nuclear weapons, they must draw on many different physical resources and intellectual knowledge to actually accomplish what they want to do. You are to produce an overall analysis and definition of the physical infrastructure, the scientific, and

technological knowledge needed to develop nuclear weapons. What kind of infrastructure is it? What does it cost? What sacrifices will have to be made? What kinds of people will be necessary? What fields of study will be important? Select two or three nations for this study.

Suggested Activities

1. Prepare for your examination of nonproliferation issues by viewing the film “Day After Trinity” research and do a technical critique. Since science is of great importance in the development of nuclear weapons, determine if the science is correctly portrayed in the movie. Take notes during the movie and write a "recipe" for creating a nuclear device with questions on what you will need to know. Compare your “recipe” with facts you have gained from research.
2. Compare and contrast the scientific and technological efforts of developing a nuclear weapon in the United States and the Soviet Union during the 1940’s and 1950’s, the scientific and technological efforts that took place in India and Pakistan in the 1990’s, and the efforts taking place in a country such as Iran or North Korea today.
3. What does a nation learn about its nuclear weapons by conducting nuclear tests? Is testing as important today as it was during the early development of nuclear weapons in the late 1940’s and the 1950’s?
4. What defines the concepts of “reliability” and “safety” within a nuclear arsenal? What roles do science and technology play?
5. In the United States it is called “Stockpile stewardship.” It is the name given to the program of maintenance for US nuclear weapons. Produce an overall analysis regarding the science and technology that any nation would need to maintain or refine nuclear weapons programs. Select two or three nations for this study.
6. In addition to having a reliable stockpile (knowing that the weapons will work) and a safe stockpile (knowing the weapons will not go off accidentally), a nation must also have a “secure” stockpile. Research and report on ways that countries can be assured that only those who have authority or reason to can gain access to these weapons.