Your excellencies, thank you for the opportunity to speak with you this morning. It is my job today to remind us what will happen when nuclear weapons are actually used. And we must understand that as long as nuclear weapons exist, it is not a question of “if” but only a question of “when”. We have been dodging bullets for 70 years. We have been incredibly lucky. But we cannot expect our luck to last forever. If we do not eliminate these weapons, one day soon, either by design or by accident, they will be used.

The anniversary of Hiroshima and Nagasaki has given us a terrifying reminder of what nuclear weapons can do. But the horror caused by two small bombs cannot prepare us for the devastation that we will face the next time these weapons are used.

For as you know, today there are some 15,000 nuclear weapons in the world, and most of them are 10 to 50 times more powerful than the Hiroshima bomb.

Recent studies have shown that even a limited regional nuclear war, as might happen between India and Pakistan, using just 100 Hiroshima sized weapons, less than ¼ of 1% of the world’s arsenals, will be a global catastrophe. 20 to 30 million people will die in South Asia in the first week as a direct result of the explosions, the fires, and the radiation. But these direct effects are only part of the story. The fires will loft 5 million tons of soot into the upper atmosphere blocking out the sun for more than a decade. The resulting climate disruption and the catastrophic decline in food production will cause a global famine that will put 2 billion people at risk. Two billion dead is not the extinction of our species, but it is the end of modern civilization. No civilization in history has survived a shock of this magnitude, and ours will not either.

A nuclear war between the US and Russia will be far worse. We have been told for 25 years, since the end of the Cold War, that we do not have to worry about war between the nuclear superpowers. Recent events have shown how hollow those assurances are. Even if neither side deliberately chooses to use their nuclear weapons there is always the possibility of accidental nuclear war or a nuclear war triggered by cyber terrorists. So let us consider the consequences of a large scale use of nuclear weapons.

Let me start by describing a nuclear attack today on a city like New York. Such an attack will not involve one Hiroshima sized bomb, but 10 or 15 bombs each on average 30 times more powerful. To understand the devastation they will cause, let me use the model of a single 20 megaton explosion. This model underestimates the destruction that will take place, but it is an acceptable approximation.

Within one thousandth of a second a fireball will form reaching out for 3 kilometers in every direction. Within this area the temperature will rise to 20 million degrees and everything will be vaporized. The buildings, including the one in which we now sit, the people, the trees, the upper level of the earth itself—they will all disappear.
To a distance of 6 kilometers in every direction the explosion will generate winds in excess of 1000 kilometers per hour, and blast pressures greater than 25 pounds per square inch. Mechanical forces of this magnitude will destroy anything that human beings can build.

To a distance of 9 kilometers in every direction the heat will be so intense that automobiles will melt.

To a distance of 25 kilometers in every direction the heat will still be so intense that everything flammable will burn. Cloth, paper, heating oil, gasoline, plastic. It will all ignite. Hundreds of thousands of fires which will coalesce over the next 30 minutes into a giant fire storm 50 kilometers across. Within this entire area the temperature will rise to 800 degrees Celsius. All of the oxygen will be consumed and every living thing will die. In the case of New York City some 15 million people dead.

And if this attack is part of a large scale war between the US and Russia the same level of destruction will be visited on a every major city in both countries, and if NATO is drawn into the conflict, on most of the great cities of Europe. Perhaps a half billion dead in a matter of days.

But, as is the case with a more limited war in South Asia, these direct effects are only part of the story. The fires caused by a war involving just the forces left in the US and Russian arsenals when New START is fully implemented will put 150 million tons of soot into the upper atmosphere and that will drop temperatures across the globe by an average of 8 degrees Celsius. In the interior regions of North America and Eurasia the temperatures will fall 25 to 30 degrees. The earth has not been this cold in 18,000 years since the coldest point of the last Ice Age. In the northern hemisphere the temperature will drop below freezing for some part of every day for 2 to 3 years. Ecosystems will collapse, food production will stop and the vast majority of the human race will starve. It is possible that we will become extinct as a species.

This is the danger we face. It is not the future that must be, but it is the future that will be if we don’t eliminate nuclear weapons.

Look, I am not a diplomat. I am a doctor and sometimes I have to speak frankly with my patients when they are engaging in dangerous, self destructive behavior. That is exactly what we are all doing right now. So forgive me for speaking bluntly.

The leaders of nine member states of this organization have chosen to build and maintain arsenals of nuclear weapons. Their weapons pose an existential threat to their own citizens and to all humanity. Under Article VI of the Non-Proliferation Treaty 5 of these nations have a legally binding obligation to negotiate the elimination of these weapons. All 9 claim they hope to do this “someday”, but that the time is not right. And so we must ask them, “If not now, when?” Do they really believe it will be easier in the future when there will be more people competing for less water, less arable land, less food? They claim that we must follow a step by step approach. And so we must point out that the step by step approach they are pursuing is a march to nowhere because they are not planning to arrive at a world free of nuclear weapons. Instead they are spending hundreds of billions of dollars to modernize their nuclear arsenals and these actions speak louder than words: they are planning to maintain these dangerous arsenals forever.

And so it falls to the rest of humanity to take action. We must create a new international norm against this intolerable threat to our survival, a norm which stigmatizes these weapons and those who possess
them, which unequivocally identifies nations which threaten the very survival of all humanity as the rogue states that they have become.

The first step in this process is clear: 115 nations have signed a Humanitarian Pledge to work for a new legal instrument that fills the gap in international law which does not yet prohibit the possession of nuclear weapons. We must turn that Pledge into an actual Treaty which bans these weapons and paves the way for a nuclear weapons convention that will establish a verifiable, enforceable framework for their elimination. And we must do this with great urgency. These negotiations will not be easy. But we have no choice.

A great burden rests on our shoulders. It is not just ourselves who will die in a nuclear war. These weapons will destroy everything we have inherited from our ancestors and everything that we should pass on to our children including the simple chance to stand on this earth and build lives for themselves and for their children. We have neglected this responsibility for far too long. We come from many different traditions and cultures. In the sacred book of my religion it is reported that god said, “Behold, I have set before you life and death. Therefore choose life that you and your children might live.” That is literally the choice before humanity today. So let us act now and choose life so that, indeed, our children might live.