



Preventing Nuclear War and War Against Civilian Populations: Also a Task for the Sciences

A statement by the Council of the Pontifical Academy of Sciences

The Vatican, April 8, 2022

Humankind is again confronted with a grave threat, arising from armed conflicts and the acute war that Russia has inflicted on Ukraine. The possibility of nuclear war has been raised by the aggressors.

Pope Francis has made known his concern about this “terrible, inhuman, sacrilegious and senseless” war that could potentially escalate beyond the terrible level it already has reached and pose nuclear risks.¹

There is the increasing danger that many other countries and terrorist groups may acquire nuclear weapons or develop the capability to produce them. The acute risks relate in particular to

- intentional or unintentional destructions of nuclear power plants with grave consequences for large populations,
- uncontrolled leakage of nuclear waste that can be used for so-called dirty bombs,
- the potential use of so-called tactical nuclear weapons in battlefields, for instance in the Ukraine,
- keeping nuclear weapons on high alert, potentially increasing the likelihood of a nuclear weapons launch accidentally or as a result of cyber manipulation.
- the use of powerful nuclear weapons and other weapons internationally beyond Ukraine when war further escalates.

The Pontifical Academy of Sciences has comprehensively addressed the risk of nuclear war, for instance with an important “DECLARATION ON PREVENTION OF NUCLEAR WAR” by an assembly of Presidents of scientific academies and other scientists from all over the world convened by the PAS on September 23-24, 1982. This concept note

¹ “Faced with the danger of self-destruction, may humanity understand that the moment has come to abolish war, to erase it from human history, before it erases humans from history” (Pope Francis, *Angelus*, 27 March 2022 *et passim*).

partly draws on that declaration, which has become very relevant again.² Yet, the world situation has changed and even deteriorated in various ways.

Mistrust and suspicion between nations have grown. There is a breakdown of serious dialogue between nations in the East and West and between North and South and, in particular, between the biggest and most powerful nations of USA, China, EU, and Russia.

Serious inequities among nations and within nations, shortsighted national or partisan ambitions, and lust for power are the seeds of conflict which may lead to general and nuclear warfare.

The scandal of poverty, hunger, and degradation is in itself becoming an increasing threat to peace. Nuclear pollution of agricultural fields would prevent farming for the long run. Already hinderance of farming in Ukraine and food trade from Ukraine and Russia exacerbate the world food crisis because large quantities of basic foods were produced there for the world.

Recognizing the natural rights of humans to survive, to live with dignity and to aspire to happiness, science must be used to assist humankind towards a life of flourishing, fulfilment and peace.

Not only the potentialities of nuclear weapons, but also those of chemical, biological and even conventional weapons are increasing by the steady accumulation of new knowledge, including robotics and artificial intelligence,³ as well as advanced hypersonic missiles that are designed to evade existing defence systems.

This new scenario entails a serious loss of humanity and freedom, as well as increased vulnerability, not only of individuals, especially non-belligerents, including children, women, the elderly and the sick who are indiscriminately terrorized, or forced to migrate, but of humanity as a whole and of the planet.

It is clear that non-nuclear wars, as horrible as they already are, have also become more destructive. Human wisdom, however, remains comparatively limited, in dramatic contrast with the apparently inexorable growth of destructive power. In particular, the human consciousness cannot make sense of the ontological, moral and human negativity of trying to justify the use of such destructive powers that inflict death everywhere in order to “civilize” and “moralize” or simply occupy.

It is the duty of scientists to speak out and help prevent the perversion of their achievements and to stress that the future of humankind depends on the acceptance by all nations of moral principles transcending all other considerations. The research and science on overcoming and preventing wars, and the science of fostering peace – not just absence of wars – must be a focus of all science disciplines.

The catastrophe of nuclear war and escalating conventional wars which do not even spare civilian populations can and must be prevented. Leaders and governments have a

² <https://www.pas.va/content/dam/casinapioiv/pas/pdf-volumi/documenta/documenta4pas.pdf>

³ https://www.pas.va/en/publications/scripta-varia/sv144_springer.html

grave responsibility to fulfil in this regard. But it is humankind as a whole which must act for its survival.

Recognizing that use of excessive conventional forces and the spreading of nuclear weapons increase mistrust among nations and could lead to confrontation with the risk of nuclear war, and guided by the conviction that human beings should resolve all differences and territorial disputes by reasoning, dialogue, international law, negotiation, arbitration and other peaceful means, **we call upon all nations:**

- To abide by the principle that force or the threat of force will not be used against the territorial integrity or political independence of another State.
- To prevent the use of force as a method of settling international conflicts, since it entails the risk of escalating military confrontation, including use of nuclear, chemical and biological warfare.
- To provide shelter and protection for the millions of refugees from all parts of the world fleeing wars and persecution.
- To prevent the proliferation of nuclear weapons in additional countries, which seriously increases the risk of nuclear war and might lead to nuclear terrorism.
- Never to be the first to use nuclear weapons, and renew and increase efforts to reach verifiable agreements curbing the arms race and reducing the numbers of nuclear weapons and delivery systems. These agreements should be monitored using state-of-the-art technology.
- To find more effective ways and means to prevent the further proliferation of nuclear weapons. The nuclear powers have a special obligation to set an example in reducing armaments and to create a climate conducive to non-proliferation.
- To prevent peaceful uses of nuclear energy from being diverted to the proliferation of nuclear weapons.
- To take all practical measures that reduce the possibility of nuclear war by accident, miscalculation or irrational action.
- To continue to observe existing arms limitation agreements while seeking to negotiate broader and more effective agreements. Our goal must be to build a collective security system where nuclear weapons have no place.

We appeal:

- 1) To national leaders, to take the initiative to end the war in Ukraine immediately and initiate a peaceful resolution; first of all, seeking steps to reverse the escalation war, looking beyond narrow concerns for national advantage; and to eschew military conflict as a means of resolving disputes.
- 2) To scientists, to use their creativity for the betterment of human life, and to apply their ingenuity to exploring means of avoiding war and developing practical methods of arms control, especially nuclear weapons.

- 3) To religious leaders and other custodians of moral principles, to continue to proclaim forcefully and persistently the grave human issues at stake, so that these are fully understood and appreciated by society. In particular, to reach out to each other in the various Christian and all other religious communities to engage for peace with their respective communities.
- 4) To people everywhere, to reaffirm their faith in the destiny of humankind, to insist that the avoidance of war is a common responsibility, to combat the belief that wars are unavoidable, and to labour unceasingly to ensure the future of generations to come. Avoiding wars and achieving a meaningful peace requires not only the powers of intelligence, knowledge and science, but also those of goodwill driven by love and justice, ethical virtues, morality, responsibility, values and conviction.

Signatories

JOACHIM VON BRAUN, President of the Pontifical Academy of Sciences

MARCELO SÁNCHEZ SORONDO, Bishop-Chancellor of the Pontifical Academy of Sciences

WERNER ARBER, Emeritus President for Life, Pontifical Academy of Sciences and Emeritus Professor of Molecular Microbiology, Biozentrum, University of Basel, Switzerland

C.-J. CHEN, PAS Council Member and Academician, Professor, Graduate Institute of Epidemiology, National Taiwan University College of Public Health

EDDY DE ROBERTIS, PAS Council Member and Academician, Norman Sprague Professor of Biological Chemistry, David Geffen School of Medicine, University of California Los Angeles, USA

EWINE VAN DISHOECK, PAS Council Member and Academician, Professor of Molecular Astrophysics, Leiden University, The Netherlands

FABIOLA GIANOTTI, PAS Council Member and Academician, Director-General at CERN (European Organization for Nuclear Research), Switzerland

MOHAMED HASSAN, PAS Council Member and Academician, President of The World Academy of Sciences, Sudan

V. RAMANATHAN, PAS Council Member and Academician, Distinguished Professor Emeritus, Scripps Institution of Oceanography, Univ of California at San Diego, USA; Climate Solutions Scholar, Cornell University, Ithaca, NY, USA

WOLF SINGER, PAS Council Member and Academician, Founding Director of the Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society, Frankfurt, Germany

STEFANO ZAMAGNI, President of the Pontifical Academy of Social Sciences

DARIO EDOARDO VIGANÒ, Vice Chancellor

KOKUNRE AGBONTAEN-EGHAFONA, PASS Academician
ZERESEENAY ALEMSEGED, PAS Academician
VANDERLEI S. BAGNATO, PAS Academician
ANTONIO M. BATTRO, PAS Academician
GUSTAVO BELIZ, PASS Academician
HELEN BLAU, PAS Academician
ROCCO BUTTIGLIONE, PASS Academician
AARON J. CIECHANOVER, PAS Academician
PIERPAOLO DONATI, PASS Council Member and Academician
GÉRARD-FRANÇOIS DUMONT, PASS Academician
GERHARD L. ERTL, PAS Academician
FABIO FERRUCCI, PASS Academician
ELAINE FUCHS, PAS Academician
TAKASHI GOJOBORI, PAS Academician
ANA MARTA GÓNZALEZ, PASS Academician
RODRIGO GUERRA LÓPEZ, PASS Academician
VITTORIO HÖSLE, PASS Council Member and Academician
PIERRE LÉNA, PAS Academician
JUAN M. MALDACENA, PAS Academician
JOHN McELDOWNEY, PASS Academician
ROLAND MINNERATH, PASS Council Member and Academician
JÜRGEN MITTELSTRASS, PAS Academician
ERNA MÖLLER, PAS Academician
SALVADOR MONCADA, PAS Academician
PEDRO MORANDÉ, PASS Academician
JOSÉ N. ONUCHIC, PAS Academician
CESARE PASINI, PAS Academician
WILLIAM D. PHILLIPS, PAS Academician
JOHN C. POLANYI, PAS Academician
INGO POTRYKUS, PAS Academician
RICCARDO POZZO, PASS Academician

STANLEY B. PRUSINER, PAS Academician

YVES QUÉRÉ, PAS Academician

MINA RAMIREZ, Honorary PASS Academician

CHINTAMANI N.R RAO, PAS Academician

PETER H. RAVEN, PAS Academician

MARTIN J. REES, PAS Academician

IGNACIO RODRÍGUEZ-ITURBE, PAS Academician

LOUIS SABOURIN, Honorary PASS Academician

MARCELO SUÁREZ-OROZCO, PASS Council Member and Academician

VIRGILIO VIANA, PASS Academician

RAFAEL E. VICUÑA, PAS Academician

MARYANNE WOLF, PAS Academician

ANTONINO ZICHICHI, PAS Academician

PAULUS M. ZULU, PASS Academician