Nuclear Weapon Harm Reduction:

A Framework

BASIC

Dave Cullen & Anahita Parsa

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Front cover image: Drilling equipment at the Inkai Uranium Mine in Kazakhstan.

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Contents

On nuclear weapon harm reduction 5

Introduction 5
Overview 6
How harm reduction relates to disarmament, treaties, and other legal mechanisms 7
About the Framework 8
Questions of completion, unquantifiable harms, and human need 9
Cross-cutting and interrelated harms 11
Conclusion: Moving forward with harm reduction 12

The Framework 14

Table 1 15
Table 2 17

Appendix 1: List of acronyms 18

Appendix 2: Interview questions 19

An RAF Handley Page Hastings transport plane flying over the village of London, Kiritimati, during preparations for the UK's Operation Grapple hydrogen bomb test.

On nuclear weapon harm reduction

Introduction

This Framework is the first publication from BASIC's *Scoping British Nuclear Weapons Harms* project. Funded by the Joseph Rowntree Charitable Trust, this project continues previous work undertaken by BASIC and others on nuclear weapon harm reduction, using the United Kingdom as a case study of a nuclear-armed state. BASIC's first initiative in this area was an expert briefing in June 2023, hosted at the Austrian Embassy in London. From October 2024 to June 2025, BASIC's Emerging Voices Network (EVN) undertook a policy cycle on 'Reducing Nuclear Harms', culminating in an anthology publication at the end of the project. The Framework for nuclear weapon harm reduction presented in this publication builds upon this earlier work.

This introductory essay first gives an overview of how we developed the project. This is followed by a section on how our harm reduction approach relates to disarmament and attempts to seek legal redress for nuclear harms. We then provide an outline of the Framework, and how it is used. The next section explains why the Framework does not aspire to be exhaustive, why some harms are unquantifiable and the centrality of the human need. We then discuss how to address cross cutting and interrelated harms within the Framework and some harms that it cannot easily capture. We close by discussing our hopes for the future of this work. The Framework itself can be found in the second part of this publication.

Overview

The Nuclear Weapon Harm Reduction (NWHR) approach, developed by BASIC, uses a concept from public health approaches to issues such as substance use,[1] and applies it to nuclear weapons. The approach follows on from, and incorporates, earlier work on the humanitarian impacts of nuclear weapons. Within the nuclear field, nuclear 'harms' — understood as negative impacts of nuclear weapons, spanning different kinds such as cultural harm or physical harm — is a term used in literature on humanitarian impacts,[2] but harm reduction has not been developed as a specific concept in this field. The NWHR approach draws upon harm reduction approaches in other policy areas and applies an analogous approach to nuclear harms. The *Scoping British Nuclear Weapons Harms* project consolidates the NWHR approach into a methodology for devising nuclear weapon harm reduction measures: the NWHR Framework. The project then uses the Framework to examine the UK weapons programme.

The first stages of the project involved a literature review and a consultation process. The literature review involved two parts, firstly gathering knowledge and examples on instances of harms associated with the UK's nuclear weapons arsenal.[3] The second focused on investigating scholarship and literature around the concepts of harm and harm reduction in fields such as drugs policy,[4] environmental policy,[5] and some conventional weapons.[6] The literature review revealed underresearched or underrepresented areas of harm. For example, there is extensive literature on the harms to physical health associated with uranium mining and testing, but there is far less available literature on the social and cultural impacts of nuclear weapons infrastructure in the UK.[7] It is beyond the scope of this project to directly address these gaps, but it is our hope that highlighting may spur others to do so.

During the second year of the project, we undertook a consultation process to ensure that the Framework is as valuable as possible to a broad range of potential users. This was carried out through a series of interviews with identified stakeholders – affected communities, academics, campaigners, diplomats, and atomic test veterans. We had 15 interviews in total, and they were hosted virtually. The interviews were on a non-attributable basis, not recorded, and were semi-structured in format. We have assigned a number to each interviewee in order to differentiate them. The questions included in the interview were split into two portions. The first set of questions to gauge the interviewee's understanding and opinions on harms, nuclear weapons, and other key concepts.[8] The second set of questions were to get the interviewee's immediate reaction to the draft Framework, after reading and reviewing it.

The ultimate goal of the NWHR approach is to assemble a community of practice that can use The Framework to develop policy mechanisms for addressing nuclear harms, as well as identifying how those mechanisms can be implemented and opportunities for further work on NWHR.

1 North Carolina Department of Health and Human Services, April 2023, 'Harm Reduction to Prevent Overdose: A Primer', https://injuryfreenc.dph.ncdhhs.gov/preventionResources/docs/Harm_Reduction_Primer.pdf.

2 Elizabeth Minor, December 2023, Article 36, 'Progress and next steps towards addressing nuclear harm through the TPNW', https://article36.org/wp-content/uploads/2021/07/addressing-nuclear-harm-tpnw1msp-elizabeth-minor.pdf.

3 A major source for this material was Nuclear Information Service, November 2017, 'Playing with Fire' report, https://www.nuclearinfo.org/wp-content/uploads/2020/09/playing-with-fire-report-FINAL.pdf.

4 'Substance Use: Harm Reduction', SAMHSA, https://www.samhsa.gov/substance-use/harm-reduction.

5 Sandrine Maljean-Dubois, 2021, The No-Harm Principle as the Foundation of International Climate Law. Debating Climate Law, https://shs.hal.science/halshs-03286152/document.

6 Article 36, 'What we do', https://article36.org/what-we-do/.

7 Our literature review did not reveal any academic studies relating to the social and cultural effects of nuclear weapons infrastructure in the UK. A wider literature exists on cultural attitudes to nuclear infrastructure more generally. However, this is predominantly concerned with the potential for local opposition to siting decisions, and social and economic factors that might affect it, rather than broader cultural or social effects. Some of this literature relates to US nuclear weapons sites and the Sellafied site in the UK (see, for example,Greenberg, Michael, Andrew Isserman, Donald Krueckeberg, Karen Lowrie, Henry Mayer, Darien Simon, and David Sorenson. "Socioeconomic Impacts of US Nuclear Weapons Facilities: A Local-Scale Analysis of Savannah River, 1950–1993." Applied Geography (Sevenoaks) 18, no. 2 (April 1, 1998): 101–16. doi:10.1016/S0143-6228(98)00001-0;Freudenburg, W.R, and D.J Davidson. "Nuclear Families and Nuclear Risks: The Effects of Gender, Geography, and Progeny on Attitudes toward a Nuclear Waste Facility." Rural Sociology 72, no. 2 (June 2007): 215–43. doi:10.1526/003601107781170017.

8 The interview questions are included in the Appendix below.

How harm reduction relates to disarmament, treaties, and other legal mechanisms

We regard harm reduction work as being parallel to questions of the legal responsibility for harms, and to efforts for disarmament and the elimination of nuclear weapons. While these parallel endeavours may have different timescales, one is not a pre-requisite for the other, and harm reduction is intended neither as a replacement for, nor to be in conflict with, this other work. Although harm reduction in other fields may treat the harms that they deal with as inescapable facts, that is explicitly not an element of our approach. As we have said elsewhere:

> *It is not the intention to accept the existence of nuclear weapons ad infinitum, or to normalise their existence. But, in the current security context, irreversible nuclear disarmament will likely not happen in the short term. Our aim is to ask, in the meantime, what are the implications and impacts of these weapons on people and the planet? What can we do to prevent, reduce, and respond to the harms they engender?*[9]

Users of our Framework are likely to also have differing views on the relationship between harm reduction and the question of legal responsibility for harms. For many, the establishment of legal responsibility will be a significant component of remediation measures, and for some the formal acknowledgment that comes with legal accountability is an important end in itself. Often there is an expectation that the financial burden of harm reduction will fall upon those legally responsible. Although this is not the focus of the Framework and NWHR approach, there is no intent to criticise or dissent from those who seek justice in this respect. NWHR is a parallel process because it prioritises near-term amelioration over the resolution of these questions, requiring only a common agreement on need as a necessary prerequisite for a discussion on how to proceed.

As noted in our interviews,[10] international law relating to nuclear weapons harm is evolving. Article 6 of the Treaty on the Prohibition of Nuclear Weapons (TPNW), which obliges states to help people in their jurisdiction affected by nuclear testing and use and carry out decontamination, and Article 7 which obliges other States Parties to provide assistance with this, are a significant development in this area.[11] We have designed the Framework, and the nuclear weapon harm reduction approach more generally, to be 'treaty agnostic': flexible enough to be used within different multilateral treaties and institutional regimes, but not tied to any specific one. The aim is to play a role in supporting existing multilateral treaties and measures, but to go beyond existing international obligations in terms of harm reduction, as determined by need. At a time when the international liberal order is under threat, action to address harms should not be dependent upon political and institutional progress: it is justified on its own terms. Beyond this, we hope collective harm reduction work can also be a way to build resilience around existing multilateral instruments, at a time when diplomatic progress is not forthcoming.

We encourage the user to reflect upon how the issues of legal and financial responsibility relate to each other and to proposed HR strategies. In the context of state responsibility, it is also important to consider transboundary harms, and the responsibilities of states which may have facilitated harms but were not primarily responsible. Our hope is that users of the Framework are limited only by their imagination, and can be as conservative or radical as they wish in approaching these questions. The only constraint we wish to place on the political possibility space is that the guiding imperative should be human need.

9 Anahita Parsa and Dave Cullen, 30th June 2025, BASIC, 'Nuclear Harm Reduction - An Introduction'. https://basicint.org/nuclear-harm-reduction-an-introduction/.

10 Interviewee 5, 20th November 2025 and Interviewee 6, 20th November 2025.

11 Laura Rose Brown, BASIC, 'Preparing for the First Review Conference of the Treaty for the Prohibition of Nuclear Weapons: An analysis of the TPNW's implementation and potential for impact', April 2026.

About the Framework

The Nuclear Weapons Harm Reduction Framework is intended to enable the user to identify known harms and devise harm reduction strategies. It is designed to be accessible to a wide range of stakeholders including, but not limited to, affected communities, academics, campaigners, diplomats, and atomic test veterans. The Framework itself consists of two tables. Table 1 is used for inputting and categorising different harms associated with a particular nuclear programme; Table 2 is used to identify and develop harm reduction approaches, and can be completed for each specific harm identified in Table 1. Alongside these two tables are a set of instructions to aid the user in populating the tables and some reflective prompts to encourage a broad consideration of the topic. The two tables correspond to the two steps in harm reduction – first identifying the harm, and then finding ways to address it.

We prioritised flexibility, accessibility, and adaptability in design of the Framework in the hope that it can fulfill multiple roles for different users. From the outset it was envisaged that it would be used as an awareness-raising tool, as well as for systematising and centralising knowledge about a particular case study. The process of populating the Framework can also help to identify under-researched and under-acknowledged harms and areas of harm reduction, and identify obstacles and tensions that impact the feasibility of harm reduction measures. The core philosophy of our approach is addressing immediate human need, and we hope that the Framework can both spur and facilitate policy action to this end. Our interviewees also suggested that the Framework could be used for educational projects, for affected people to think through and list the harms that they have suffered, and for the sharing of best-practice harm reduction practices. We encourage the reader to think creatively about ways in which the Framework could be used, as this list is by no means exhaustive.

It is important to emphasise that the Framework is not intended to be restricted to a particular definition of harm, and there is no canonically right or wrong way to use it. Our hope is that it can help to identify, cohere, and coalesce a community of practice who are interested in navigating and mediating their different understandings and approaches to address the human need that is occasioned by nuclear harms. For this reason, we want to give each user the space to define harms and harm reduction in the way that best suits their approach and analysis, rather than being prescriptive. The intent is that the Framework can be utilised as a tool by a broad range of stakeholders, including, but not limited to those we have contacted as part of our consultation.

It follows from this that the Framework does not need to be fully completed to be useful, and it has been devised with the intent that it will still prove valuable for users who are focussed on certain categories of harm, stages of the nuclear weapon life cycle, or particular harm reduction strategies. Through the process of consultation, it has become clear that a lot of potential users would see more value in the Framework when populated with information, rather than as a blank slate, whereas the expectation when the project began was the opposite. Users are free to engage with the Framework in either state, but our consultation suggests that an empty Framework would primarily be used for research projects and educational initiatives. Having the UK as a case study was always the end goal of this project, and this publication will be followed by three reports populating the Framework with information about the UK. We are also planning a follow-on project that would establish an online presence for the Framework, where the information relating to each nuclear weapon programme could be hosted as a shared resource, and incrementally added to.

Questions of completion, unquantifiable harms, and human need

A significant point to note is that the Framework, even when populated, is not intended to be comprehensive or exhaustive. The complexity, secrecy, and long histories of nuclear weapons programmes are such that whole professional careers can be focussed on individual aspects of them. A detailed and broad understanding of those harms is of course necessary for harm reduction, and we will endeavour to provide one in the forthcoming reports. However, a completionist approach actually runs somewhat contrary to the intent of the Framework, which is to tabulate known harms and to focus on potential reduction strategies, based on immediate human need. Harm reduction work must not be contingent upon achieving a certain degree of knowledge or a data-collection threshold. The imperative for action begins as soon as a harm is identified. While further knowledge can, and should, inform the approach and method, it cannot be treated as a pre-requisite.

Even a hypothetical version of the Framework that reflected the complete corpus of contemporary public-domain knowledge would have to grapple with some inescapable fundamental uncertainties that confront anyone examining this issue. The first of these is that new information is still emerging, even in relation to historical harms, and there is no way to predict how the information picture will change in the future. In the comparatively short period of time we have been engaged in this project, there have been significant changes within the UK. The government has begun to transfer the 28,000 records from the Merlin database,[12] which was compiled by the Atomic Weapons Establishment (AWE) in response to legal action by nuclear test veterans, to the National Archives. The process is likely to take several years, and some information will still be redacted on national security grounds.[13]

It remains to be seen whether the results of blood tests carried out on veterans are included in the database.[14]

This is not simply a case of a partial evidential picture, or the incremental process of historical enquiry. In the context of radiation and human health, missing medical records can make it impossible to demonstrate to a standard that many regard as scientifically credible that a harm has occurred at all. Stochastic effects are an inevitable consequence of exposing a group of people to radiation. Depending on the radiation dose, a certain proportion of the group will suffer from cancers and other consequences of genetic damage, such as birth defects, but there is no way to predict which members of the group will experience these health problems. Without the data that can show the incidence of these effects in the group prior to the radioactive harm, their occurrence afterwards, and data on the size of the radioactive dose, it may simply be impossible to demonstrate a statistical correlation between dose and effects. Those that seek to deny that a harm occurred or avoid responsibility will then have a scientifically plausible basis on which to claim that there is no 'proof'.

12 The National Archives. 'Records of Veterans of Nuclear Testing (the Contents of the Merlin Database)'. Text. The National Archives. Accessed 27 April 2026. https://www.nationalarchives.gov.uk/help-with-your-research/research-guides/records-of-veterans-of-nuclear-testing-the-contents-of-the-merlin-database/.

13 Hansard, 30th June 2025, 'Nuclear Test Veteran Records Exercise and the Merlin Database'. UIN HCWS748. https://questions-statements.parliament.uk/written-statements/detail/2025-06-30/hcws748.

14 Susie Boniface, 28 May 2025, Daily Mirror, 'Veterans to See Nuked Blood Evidence at Last, but It Will Take 4 Years to Read' https://www.mirror.co.uk/news/veterans-see-nuked-blood-evidence-35299407.

For small groups of exposed individuals, or less common stochastic effects, it might be mathematically impossible to show a statistically significant correlation to a 90% or 95% confidence level, even though the effects are real, and a direct consequence of the harm. Exposed groups that have less access to healthcare, social capital, or links with scientific practitioners will face greater difficulties in this respect than groups that do, one of the many factors exacerbating the harms done to indigenous people by nuclear programmes. These barriers are a fundamental consequence of the effects of radiation on human health and of standard academic practice in epidemiology. When we turn from harms to physical health, to psychological, social, and cultural harms, the possibility of definitive certainty about the scale and nature of harms evaporates entirely.

Some other harms will be manifested, either partially or entirely, as subjective experiences. But these are no less real, and the people suffering from them deserve every assistance in the form of harm reduction, irrespective of whether a certain evidential standard has been met. Other harms, including many of the greatest harms associated with nuclear weapons, take the form of a future risk, or involve the risk of past harms reoccurring. The actual scale of those risks are fundamentally unknowable, and much of the debate in our field is founded upon differing estimates of the likelihood of different risks. Nonetheless, irrespective of these differences, there is a common human need to prevent these risks being realised.

For the reasons above, we maintain that the only proper measure of harm, and of the necessity for harm reduction, is human need.

The core principle of the NWHR approach is that if there is a need for prevention, mitigation, or remediation of a harm stemming from a nuclear weapons programme, then that need should be addressed.

While those affected should be the guiding voices in identifying both harms, and the needs arising from them, meaningful harm reduction necessitates a process of dialogue with others who intend to enact, advocate for or support reduction strategies. This is essential to ensure that harms and needs are fully understood, and to craft appropriate reduction strategies. Undertaking that work should not be mistaken for an assertion that nuclear weapon harms are ultimately quantifiable or inherently manageable, just that they can be identified, and should be reduced.

Cross-cutting and interrelated harms

The Framework does not distinguish between past, ongoing, and potential future harms. Harm reduction strategies will obviously be different for each of these categories. Some users may prefer to focus on only one or two of these temporal categories, but our consultation suggests that most users prefer to take a holistic approach. For these users, the Framework can set out all known types and instances of harm, and stimulate creative thinking about reduction strategies. The prompts within the Framework have been designed to encourage this reflection.

Although the approach separating the harms in Table 1 into stages of the lifecycle of nuclear weapons and categories of harm was generally welcomed by the stakeholders that we consulted with, it is important to note that this process does also obscure some harms. Some harms span several categories, or are difficult to classify under this taxonomy. Again, the prompts seek to encourage consideration about these overlaps, and to demonstrate that this can be a finding itself for the user. One of our interviewees discussed the stigma experienced by groups of affected people, and the way that it engenders feelings of guilt and shame in the individual — a harm that spans the Social, Health (Psychological), and in some cases also the Cultural categories.[15] Another told us that threats of nuclear use during the Ukraine war, and President Trump's announcement of the resumption of nuclear testing[16] had triggered a resurgence of post traumatic stress disorder (PTSD) symptoms amongst nuclear test veterans,[17] a harm arising from a combination of historical nuclear testing and an announced change in present-day policy.

On a practical level, a primary category or lifecycle stage can be chosen for the purpose of recording overlapping harms in the table, and the cross-cutting nature of it be noted as added detail. Users can also add additional rows and columns to Table 1 if they identify categories or lifecycle stages that have been missed. The Framework also cannot easily represent the way that harms can relate to each other with potentially compounding effects. The stigma our interviewee discussed could lead to ostracisation of a group or individuals, disrupting access to healthcare, leading to the kind of evidential barriers discussed above, and increased harm to physical health. These complex interrelations can again be recorded as additional detail, but the user should be aware that while they are not visually represented in the table, they may be very important in the choice of harm reduction approaches.

Other harms are not directly linked to a specific weapons programme or a specific stage in the lifecycle. Others are too diffuse, or such an intrinsic consequence of an international system involving nuclear weapons that it is difficult to conceive of meaningful harm reduction approaches to address them. One of our interviewees cited the international opportunity costs of nuclear weapons as a harm — the ways in which the possibility space of international relations is circumscribed and distorted by the employment of existential threats as a tool of statecraft.[18] This distorting effect can also be seen at the national level, with the problematic relationship between nuclear weapons and democracy, in what has been called the 'nuclear state of exception'.[19] The fact that these harms do not fit easily into the Framework is in no way intended to diminish or sideline them. The Framework has been deliberately designed for accessibility, and is an ongoing work in progress. We hope that any deficiencies that arise from these design choices are outweighed by its utility.

15 Interviewee 13, 5th February 2026.
16 Michelle L. Price and Chris Megerian, 30th October 2025, AP News, 'Trump Appears to Suggest the US Will Resume Testing Nuclear Weapons for First Time in 30 Years' https://apnews.com/article/trump-nuclear-weapons-testing-7a4626d2f9f8df62aa250b2acded51fd.
17 Interviewee 10, 8th January 2026.
18 Interviewee 7, 21st November 2025.
19 Interviewee 8, 25th November 2025.

Conclusion: Moving forward with harm reduction

The spectre of colonialism looms large over the topic of nuclear weapons harm. All states that acquired nuclear weapons before the 1970s tested their weapons in the lands of indigenous people or racial minorities. In these regions, nuclear harms are frequently compounded by the effects of colonialism and vice versa. This takes many forms, from inequalities of healthcare to the cultural disruption of displacement. It is difficult for those of us from other cultures to even comprehend the harm done by nuclear testing from the perspective of communities who regard land itself as a living being,[20] let alone try to devise harm reduction approaches. For indigenous nations, such as the Home Northwestern Band of the Shoshone Nation, the nuclear testing that was carried out on their land is part of a long history of colonial infringement of their sovereignty.[21] We have tried to follow the Nuclear Truth Protocols[22] during our work, and it is our hope that, used with humility and a commitment to understanding, the Framework can be a tool for helping to address these issues.

The legacy of colonialism, questions of legal responsibility, and intergenerational harms are extremely complicated and daunting topics. Their scale and complexity should never be underestimated. However, it is worth remembering that some harm reduction strategies do not need to be on the same scale. One interviewee told us of seeing a rusted-through padlock on a gate in the fencing at the Maralinga test site.[23] Replacing one padlock is no substitute for extensive decontamination and environmental remediation work, or ongoing institutional responsibility for the upkeep of the perimeter fencing. But it is a cheap and effective harm reduction strategy that can be pursued in the meantime. We were also struck by the importance to the veteran community of hearing an apology from the UK government and an acknowledgment of the harms done to them: a stark reminder that harm reduction does not always have to involve complex and expensive endeavours, or even need to take a material form to be effective.[24]

Harm reduction strategies will be most effective when enacted using the autonomy, resources, and power of the state. As such, it is our hope that individuals with decision-making authority within states engage with and use this Framework. It could, for example, be useful as a tool for coordination, cohesion, and communication between state organs with competencies in this area (such as Defence Ministries, disaster relief agencies and those responsible for public health). Non-State users will of course have to consider, alongside harm reduction measures themselves, the question of how they might come to be enacted and by whom. These questions are beyond the scope of the Framework, but are likely to be relevant considerations for choosing between potential harm reduction strategies. Non-State users with different political analysis and theories of changes are likely to have divergent political implementation strategies. Although the process of identifying and attempting to reconcile these differences is likely to be a fruitful one, how to undertake it is outside the remit of the Framework itself.

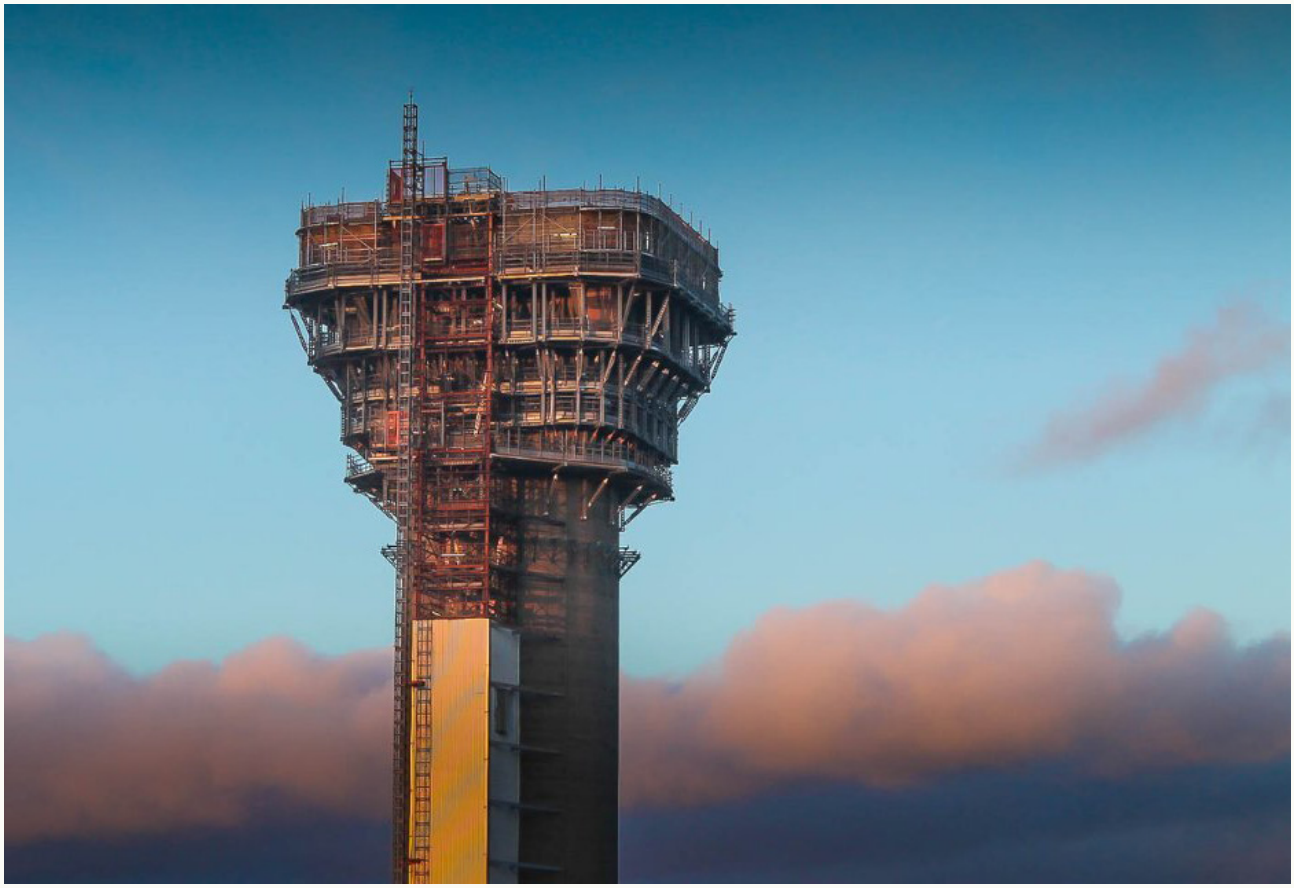
20 Interviewee 10, 8th January 2026.

21 Ian Zabarte, Accessed 11 July 2024, Al Jazeera, 'A Message from the Most Bombed Nation on Earth' https://www.aljazeera.com/opinions/2020/8/29/a-message-from-the-most-bombed-nation-on-earth.

22 The Nuclear Truth Project is "an international initiative connecting Indigenous and First Nations Peoples, affected community members, international and civil society organizations, experts and governments working for nuclear abolition." They have developed the Nuclear Truth Protocols in collaboration with affected community members. The protocols are focused on centering rights, respect, and reciprocity in the process of interacting and engaging with affected communities, in work on nuclear issues. They aim "to protect the vulnerable, shield from further trauma and harm, and ensure any efforts for remediation and assistance are centred in the work to redress both historic and any future harms from nuclear activities". As part of our adoption of the Protocols in our methodology, we also participated in training on how to implement the Protocols and identify best practices. See https://nucleartruthproject.org/our-protocols/.

23 Interviewee 10, 8th January 2026.

24 Under the 2006 Compensation Act in England and Wales and the 2016 Apologies Act in Scotland, an apology does not necessarily amount to an admission of liability. See: 'Reforming the Law of Apologies in Civil Proceedings in England and Wales'. Ministry of Justice, 2024. https://assets.publishing.service.gov.uk/media/66101d79c4c84d00113469f8/Reforming_the_Law_of_Apologies_in_Civil_Proceedings_in_England_and_Wales_consultation__web_.pdf.



The diffuser on the Windscale Pile 1 chimney during decommissioning. The filter in this distinctive structure reduced the radionuclides released in the 1957 fire.

Our hope is that this work and framing can help to identify and cohere a community of practice who want to work collectively to address these harms, despite differences of approach and outlook. While this group will necessarily be self-selecting, it is our express intent that their work centres the experience and needs of affected communities. The Framework includes prompts to encourage the user to consider some of the reflections we've raised above, as they begin to use the Framework and its two tables, and to approach the Framework with curiosity.

As stated above, we regard the Framework as an ongoing work, and we actively invite critique and feedback. While we have gained so much valuable input from our consultation, we are certain that it can be improved upon. We do not assume that stakeholders are homogenous, and we welcome input from other voices in order to help us develop this iterative resource as we continue this work.

"Harm reduction strategies will be most effective when enacted using the autonomy, resources, and power of the state. As such, it is our hope that individuals with decision-making authority withinstates engage with and use this Framework."

The Framework

> Thank you for your interest in the Nuclear Weapon Harm Reduction Framework. This tool was developed by BASIC in 2025 as a way to document the past, present, and potential future harms associated with nuclear weapons programmes across the entire nuclear weapon lifecycle, and identify methods for addressing them.

The Framework consists of two tables, and a set of instructions to assist the user in populating them. Table 1 provides an overview of all harms associated with the weapons programme of a specific nuclear possessor state, organised into separate categories and covering the different stages of the lifecycle of the weapon. For each harm identified, Table 2 is then used to identify actions that can be used to prevent, mitigate, or remediate that harm over different timescales. The two tables do not need to be filled out in full in order to be used effectively. These instructions and the list of prompts are provided to help the user to fill out the tables, and to encourage a reflective and thorough approach to the task. The prompts are not obligatory, and the user does not have to consider every single one.

The Framework is intended to be a tool that a range of stakeholders can use to identify the harms caused by nuclear weapons, and spur action to tackle them, on the basis of direct human need. We envisage that the information in Table 1 will be most useful if maintained as a single shared resource, hosted by BASIC, that others can add to or adapt as required. Conversely, different actors are likely to have different perspectives on the best approach for addressing each harm, and we would therefore encourage them to populate their own version of Table 2 for each harm.

Table 1

Nuclear Weapon Harm Reduction Framework							
Stages of the Lifecycle of a Nuclear Weapon	Categories of Harm						
	Health (Physical)	Health (Psychological)	Environ-mental	Social	Cultural	Political	Economic or Financial
Uranium Mining and Processing	Harm 1 Harm 2[i]	Harm 3	Harm 4		Harm 5		
Fissile Material Production	Harm 6						
Warhead Construction							
Transportation							
Nuclear Testing							
Nuclear Missions							
Nuclear Doctrine and Policy							
Nuclear Use							
Warhead Decommissioning							
Waste Management							

i. Further details about Harm 2.

Instructions

1. The different lifecycle stages and categories in this table are intended to allow for full and comprehensive documenting of all harms arising from one country's nuclear weapons programme. Each nuclear armed state should have its own table.
2. Sequentially working through each stage in the lifecycle and each category will help identify and include harms that might not have immediately sprung to mind through a simple process of listing.
3. Include an explanatory title for each harm in the table. Additional information about the harm or to justify its inclusion can be added as a footnote if needed.
4. The categories and stages have been informed by our research on the British nuclear weapons programme, but should be applicable to every nuclear possessor state.
5. The table should be completed by filling out each lifecycle stage from left to right, starting at the top and filling out each category for the first stage before moving on to the next one, and so on.

Prompts

- What is your hope and purpose in using this Framework? Reflecting on your hoped-for outcome will often suggest harms that should be included in the table.
- An additional dimension to consider while filling out the table are the significant actors and stakeholders relevant to each harm. For example:
  - Who perpetrated the harm?
  - Who is impacted by the harm?
  - Who has legal responsibility for the harm?
  - Who has agency, if any, to reduce the harm?
  - Is the actor in question a state, individual, and organisation?
  - Is this nuclear possessor state or their citizens affected by the harm?
  - In what national jurisdiction does the harm occur? Is it contained within that jurisdiction or transboundary?
- As well as potentially identifying other categories of harm to be included, thinking about these questions will lay the groundwork for filling in Table 2.
- This list of categories may not be exhaustive. Could additional categories usefully be added? If so, please tell us.
- What is your methodology for choosing whether to include a harm? While there will be little question over some harms, potential future harms may involve hypothetical examples. What do you think is the appropriate threshold or criteria for a harm being included into the table? Does your work require you to be strict about this, or allow for some flexibility?
- Are there areas of where harms overlap, either between stages of the lifecycle, or different categories of harm? What is the best way to record these harms in the table?

Lifecycle stage definitions:

- **Uranium Mining and Processing:** the process of extracting radioactive uranium ore from the Earth.
- **Fissile Material Production:** processing uranium to concentrate its fissile isotopes for use as fuel or in nuclear weapons, and reprocessing irradiated nuclear fuel to extract plutonium and transuranic elements.
- **Warhead Construction:** the process of engineering and assembly, using nuclear materials to create a weapon capable of a nuclear explosion.
- **Transportation:** the process of transporting a nuclear warhead, or nuclear materials, from one location to another.
- **Nuclear Testing:** full, partial, or subcritical detonations of a nuclear weapon or nuclear material for design, validation or demonstrative purposes.
- **Nuclear Missions:** all activities involved in retaining nuclear weapons as a functioning military capability.
- **Nuclear Doctrine and Policy:** the bureaucratic and ideational activities undertaken by states in order to operate nuclear weapons or leverage their nuclear-armed status.
- **Nuclear Use:** the intentional detonation of a nuclear weapon.
- **Warhead Decommissioning:** the process of retiring, dismantling, and disposing a nuclear warhead.
- **Waste Management:** the process of handling, storing, and disposing of radioactive waste.

Table 2

Nuclear Weapon Harm Reduction: Harm Title	Short-term	Medium-term	Long-term
Prevention			
Mitigation			
Remediation			

Instructions

1. Table 2 takes one of the harms identified in Table 1 as its starting point and proposes harm reduction actions to address that harm.
2. Each harm identified in Table 1 should have a corresponding Table 2, although some users of the Framework may wish to prioritise or focus upon a subset of harms.
3. Actions in Table 2 are separated into short-term, medium-term, and long-term actions, and into 'prevention', 'mitigation', and 'remediation' actions.
4. 'Prevention' actions are intended to stop the harm from occurring in the future, whether to the same group of affected people, or to a different group.
5. 'Mitigation' actions are intended to reduce the human impacts of the harm in some way. They do not seek to prevent its occurrence in totality, and may be the preferred approach in respect to past harms.
6. 'Remediation' actions are concerned with the consequences of the harm, and seek in some way to undo, reverse or correct those consequences, either wholly or partially. A remediation measure may take a different form from both the harm or consequence, such as offering financial compensation or redress for physical harms and their psychological consequences.
7. This table should also be completed by filling out each type of harm reduction action from left to right, based on the likely chains of dependency, starting at the top.
8. There is no particular definition that qualifies an action as a harm reduction measure. We leave this for the user to determine and identify measures that, in their view, count as harm reduction.

Prompts

- We have intentionally not defined timescales for the short, medium, and long-term, as these are likely to vary for each harm. What timeframes would you allocate for the harm you are addressing?
- Which actor, if any, do you have in mind to undertake this harm reduction measure? What is their agency in relation to different harm reduction approaches? (eg. legal measures, political, etc)
- What is your own position and agency? It may be useful to think about your role when filling out this table. Is it useful to you to restrict your scope to actions that you can take, or to think more broadly?
- Are there any overlaps or pathways you have identified when completing the table, whether running from top to bottom, or from left to right?
- Would it be useful to do a MOSCOW exercise (must, should, could, wish) based on the actions in your table. Are any harm reduction methods non-negotiable, or particularly desirable?
- Is feasibility an important consideration for you when identifying harm reduction methods in the table? If so, how should this be determined, and by whom?
- What is your desired end-state? For example, in the context of remediation, is returning to 'how things were' an easy, desirable, possible thing to do? Who gets to decide?
- Can you identify any potential obstacles in implementing the identified harm reduction measure? For example, this could be resource constraints, bureaucratic process, or related to political will. Consider to what extent you wish to tailor your harm reduction measure to these constraints.

APPENDIX 1

List of acronyms

AWE	Atomic Weapons Establishment
HR	Harm Reduction
NWHR	Nuclear Weapon Harm Reduction
PTSD	Post Traumatic Stress Disorder
TPNW	Treaty on the Prohibition of Nuclear Weapons

APPENDIX 2

Interview questions

Harm and Harm Reduction

- What does 'harms' mean to you in the context of nuclear weapons?
- What is your experience and/or understanding of harm reduction? (Doesn't have to be specific to nuclear weapons policy).
- How much do you think harm reduction is a politically useful concept? Do you see any limitations?
- Do you see the concept of harm reduction as being distinct from risk reduction and disarmament? If so, how could the differences be made more evident?
- Do you distinguish between 'risks' and 'harms' when in the context of nuclear weapons? If so, how?
- Are there any literature you would recommend to us for this project?

Share the Framework with the interviewee and give a few minutes to read and digest it. Explain that we're interested in their immediate cold reaction, rather than expecting a detailed analysis with no warning.

The NWHR Framework

- Is there anything you don't understand about the Framework? Do you have any immediate questions?
- Who could you envision using the Nuclear Weapon Harm Reduction Framework as a tool?
- Could you see yourself using this tool? Could this be helpful to your work?
- Is this useful as a knowledge building/educational resource? If so, how could it best be disseminated?
- Can you identify any additional categories that should be added to Table 1?
- Does the approach of splitting harms into the different stages of the weapons lifecycle feel useful and/or analytically valid?
- What impact could you see this tool having?
- Do you see any shortcomings with this Framework?
- Are the prompts helpful? Is anything missing?
- Does the Framework feel intuitive?
- Should we be more prescriptive anywhere? (for example, with the timeframes)
- On Table 2, is this a useful way to break down harm reduction approaches? Is anything missing?

BASIC promotes meaningful dialogue amongst governments and experts in order to build international trust, reduce nuclear risks, and advance disarmament.

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