

Why Human judgment still matters most

BY EARTH NEWS POLITICAL DESK

The vocabulary of modern warfare is changing faster than the laws that seek to govern it. Terms once confined to laboratories and research papers—algorithms, data fusion, machine learning—are now embedded in the operational lexicon of armed forces across the world. Artificial intelligence, once a distant promise, has entered the targeting cycle with a quiet but decisive force. Its appeal is obvious, even seductive: speed, scale, and a promise of precision that human cognition alone cannot match.

In the fog of a dense urban battlefield, where threats are diffuse and decisions must be made in fractions of time, AI-driven decision-support systems (AI-DSS) offer commanders what appears to be a decisive advantage. These systems can ingest vast streams of intelligence—imagery, intercepted signals, surveillance feeds—and synthesise them at a pace no human analyst could hope to rival. The result, in theory, is sharper situational awareness, more accurate identification of military objectives, and a refined capacity to anticipate collateral damage.

This is not merely a technological upgrade; it is being framed as an ethical one. Proponents argue that AI could help deliver a “cleaner” battlefield—one where strikes are faster, more precise, and less harmful to civilians and infrastructure. In doing so, these systems are increasingly presented as tools that could strengthen compliance with International Humanitarian Law (IHL), the legal framework designed to limit the horrors of armed conflict.

At the heart of IHL lie two foundational principles: distinction and proportionality. The former demands that combatants differentiate between military targets and civilians; the latter requires that any anticipated civilian harm must not be excessive in relation to the concrete military advantage sought. AI, with its capacity to process granular data and model outcomes, seems tailor-made to support both. It can, at least in theory, flag patterns, identify anomalies, and predict consequences with a degree of sophistication that enhances human judgment.

Yet, as with many technological promises, the reality is more complex—and far more troubling.

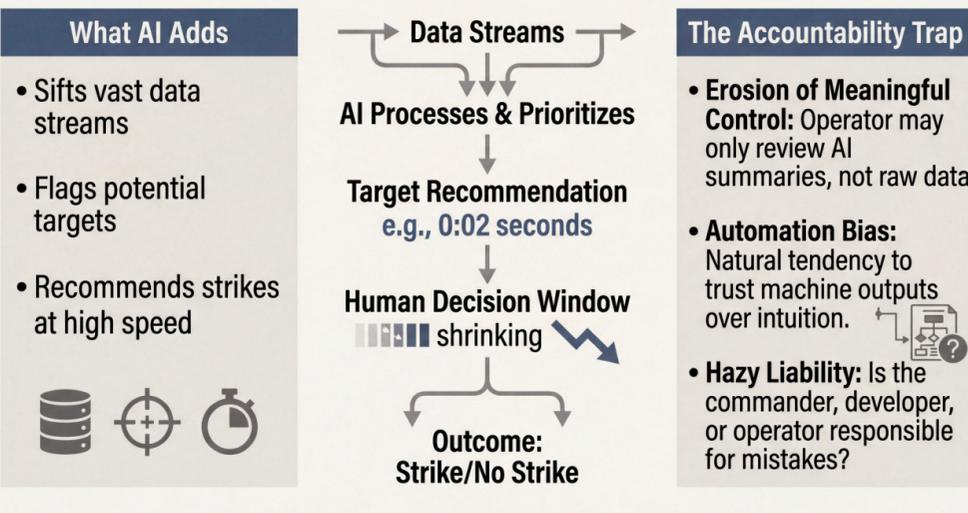
As AI systems evolve from passive analytical tools into active recommendation engines, a profound legal and ethical dilemma emerges. These systems do not merely assist; they suggest, prioritise, and, increasingly, nudge decisions. And in doing so, they introduce what experts call the “black box” problem: a situation in which the reasoning behind an AI’s output is opaque, even to those who operate it.

A commander may be presented with a target flagged as high-confidence by an AI system. The data behind that recommendation may span millions of inputs, correlations, and probabilistic calculations—far beyond the scope of human comprehension in real time. The system does not “explain” itself in human terms; it delivers a conclusion. The human operator, pressed by urgency and guided by trust in the machine’s apparent accuracy, is left to act.

Herein lies the crux of the problem: if the human cannot fully understand why a target has been selected, can they truly be said to have made the decision?

AI on the Battlefield: Speed vs Accountability

When algorithms recommend targets in seconds, ‘human-in-the-loop’ can become a formality.



This question is not academic. It strikes at the very core of accountability in warfare.

Consider a hypothetical but entirely plausible scenario. An AI system identifies a building as a high-value military target, interpreting patterns of movement and communication as indicative of a command centre. In reality, the building is a hospital. A strike is authorised based on the system’s recommendation. The result is a grave violation of IHL.

Who, then, bears responsibility? Is it the commander who, under immense pressure, authorised the strike based on a recommendation that appeared near-certain? Is it the intelligence analyst who validated the target without access to the full complexity of the system’s reasoning? Or does responsibility extend further back—to the engineers who designed the algorithm, perhaps months or years removed from the battlefield, with no knowledge of the specific operational context in which their code would be deployed?

International law, as it stands, offers no clear answer.

Most military doctrines attempt to resolve this dilemma through a simple formulation: the “human-in-the-loop.” The idea is straightforward. A human retains final control over the use of force and, therefore, remains legally and morally responsible for the outcome. On paper, this preserves the centrality of human judgment.

In practice, however, the concept is increasingly strained—if not hollowed out entirely. The reality of modern conflict is one of compressed timelines and overwhelming data. Decisions that once unfolded over hours or days are now made in seconds. In such an environment, the human “in the loop” risks becoming little more than a procedural checkpoint—a final click of approval in a chain of automated processes. The machine identifies, analyses, and recommends; the human confirms.

This is not meaningful control. It is, at best, symbolic oversight.

By placing the burden of accountability solely on the final human operator, existing legal frameworks create what might be termed an “accountability by default” paradox. The law assumes that the human has exercised genuine agency, even when the conditions for such agency—time, understanding, and the ability to question—are absent. The operator becomes a convenient focal point for responsibility, even as their capacity to influence the outcome diminishes.

The consequences of this mismatch are profound. It risks eroding the very principles that IHL seeks to uphold, while simultaneously exposing individuals to liability for decisions they were not fully equipped to make.

Recognising this growing gap, a number of states, legal scholars, and civil society organisations have begun to advocate for a more robust standard: Meaningful Human Control (MHC). Unlike the simplistic “in-the-loop” formulation, MHC seeks to define what genuine human oversight should entail in an age of intelligent machines.

At its core, MHC is not about the mere presence of a human. It is about the quality of their involvement—their ability to understand, to deliberate, and to decide.

Three benchmarks offer a practical way to assess whether such control exists.

The first is the Comprehension Test. Can the operator explain why the AI system has recommended a particular target? This does not require a deep understanding of the underlying code or algorithms. Rather, it demands clarity about the system’s inputs, its decision-making logic, and its known limitations. An operator should be able to articulate, in plain terms, what the system is tracking, how it interprets that data, and where it might be prone to error.

If such an explanation is not possible, the operator is effectively acting on faith rather than judgment. In legal terms, this undermines their ability to validate the target and, by extension, to assume responsibility for the decision.

The second benchmark is the Time Test. Control requires time—not merely to react, but to reflect. As operational tempos accelerate, the window for human deliberation narrows. When an operator is given only seconds to approve or reject a recommendation, the notion of meaningful oversight becomes questionable. Under such conditions, the human role risks being reduced to a reflex rather than a reasoned decision.

Legal frameworks must, therefore, grapple with a difficult but necessary question: how much time is sufficient for a genuine assess-

ment? Without clear standards, the pressure to defer to machine recommendations will only intensify.

The third benchmark is the Legal Agency Test. Ultimately, the authority to decide must rest with the human. AI systems may provide analysis and recommendations, but they must never become the final arbiters of life-and-death decisions. The operator must retain the ability—and the confidence—to override the machine, even when its recommendation carries high statistical certainty.

This is not merely a technical requirement; it is a moral one. Human judgment, shaped by context, experience, and ethical intuition, cannot be fully replicated by algorithms. The ability to say “no” to the machine—even on the basis of a “gut feeling”—is an essential safeguard against error and excess.

Together, these benchmarks offer a more nuanced and realistic framework for integrating AI into military operations. They acknowledge the value of technology while insisting on the primacy of human responsibility.

Yet, translating these principles into practice will not be easy.

Military institutions are, by necessity, drawn to tools that enhance efficiency and effectiveness. AI promises both. There will be strong incentives to streamline processes, reduce decision times, and place greater trust in systems that consistently deliver results. In such an environment, the subtle erosion of human control may go unnoticed—or be rationalised as a necessary trade-off.

But the stakes are too high for complacency.

The integration of AI into the targeting cycle is not a distant, hypothetical challenge. It is a present reality, unfolding in conflicts around the world. The decisions made today—about how these systems are designed, deployed, and regulated—will shape the character of warfare for decades to come.

If accountability is allowed to lag behind technology, the consequences will be measured not only in legal ambiguity but in human lives. The path forward demands a careful balance. AI should be harnessed to enhance compliance with IHL, not to circumvent it. This requires more than technical safeguards; it calls for a rethinking of legal standards, operational doctrines, and ethical norms.

Commanders, operators, and military lawyers must move beyond the comfort of the “human-in-the-loop” formulation and confront the harder question: to what extent is the human truly in control? Do they understand the system’s reasoning? Do they have the time to assess it? Do they possess the authority—and the willingness—to challenge it?

If the answer to any of these questions is no, then the illusion of control has replaced its reality.

In the end, the law’s “loop” is not defined by the presence of a human, but by the substance of their judgment. Without comprehension, time, and agency, that loop is effectively closed—not by the law, but by the machine.

And once that happens, the promise of a cleaner, more humane battlefield risks becoming something far darker: a theatre of war where decisions are made at the speed of code, and responsibility disappears into the silence of the algorithm.

ECHOES OF A DRYING LAND

War, Water and Weak Systems: Iran at the Edge of Scarcity

BY EARTH NEWS POLITICAL DESK

In Iran today, the warning signs are no longer subtle. Rivers that once sustained civilisations have thinned to a trickle. Lakes that defined regional ecosystems have receded into salt-crusted memories. In cities, the spectre of “water day zero”—a moment when taps run dry and rationing becomes inevitable—has shifted from theoretical alarm to looming possibility.

What is unfolding is not merely a crisis of climate, nor solely a consequence of governance failure. It is the convergence of three powerful forces: a warming planet, decades of policy missteps, and now, the destabilising effects of conflict. Together, they have pushed one of the Middle East’s most historically water-engineered societies into what experts increasingly describe as “water bankruptcy”.

A Crisis Years in the Making

Iran has always been a water-stressed country. Its geography—dominated by arid and semi-arid landscapes—offers little margin for error. Yet for centuries, Iranians developed ingenious systems to live within these constraints. Chief among them was the qanat network: an intricate lattice of underground channels that transported groundwater from highlands to settlements and farms. These systems functioned sustainably for generations, balancing use with natural recharge.

That balance has long since been lost.

Over the past half-century, Iran pivoted away from these traditional systems toward large-scale modern infrastructure. Dams proliferated across rivers, intended to secure water supplies and support agriculture. On paper, the strategy promised control and abundance. In practice, it often delivered the opposite.

Many of these dams were built on rivers ill-suited to sustain them. Water evaporated from vast reservoirs under intense heat, while downstream ecosystems were starved. Upland aquifers, once replenished by natural flows, began to decline. Meanwhile, the qanat systems fell into neglect, with many collapsing or running dry as groundwater levels dropped.

The result has been a slow but relentless depletion of the country’s most critical resource.

The Agricultural Trap

At the heart of Iran’s water crisis lies agriculture. The sector consumes roughly 90% of the nation’s water—a staggering figure by any standard. Yet much of this water is used inefficiently, often to grow crops in regions where climatic conditions make such cultivation inherently unsustainable.

Government policy has played a decisive role. In pursuit of food self-sufficiency, authorities have encouraged domestic agricultural production, even in water-scarce areas. Subsidies for water and energy have further incentivised excessive use, while enforcement of extraction limits has remained weak or nonexistent.

The consequences are stark. Between 2003 and 2019, Iran lost an estimated 211 cubic kilometres of groundwater—an amount roughly double its annual

Iran’s Lake Urmia, formerly the largest lake in the Middle East, has almost completely dried up since the early 2000s

Satellite images from NASA’s MODIS spectrometer

April 14, 2001



Source: NASA

March 29, 2023



water consumption. Aquifers, once reliable buffers against drought, have been pumped beyond recovery in many regions.

This over-extraction has triggered another, less visible but equally alarming phenomenon: land subsidence. As groundwater is depleted, the land above collapses, sometimes irreversibly. Entire regions have begun to sink, damaging infrastructure and further reducing the land’s capacity to store water in the future.

In effect, Iran is not just running out of water—it is dismantling the very systems that could help it recover.

Climate Change: A Force Multiplier
Overlaying these structural weaknesses is the accelerating impact of climate change. Iran is now enduring its sixth consecutive year of drought, with rainfall levels in some recent years falling dramatically below historical averages. At the same time, temperatures regularly exceed 50°C in parts of the country, intensifying evaporation and further shrinking available water supplies.

Scientific studies leave little doubt about the role of global warming. What would once have been a rare drought—perhaps occurring once in 80 years—has become far more frequent, now expected roughly once every five years under current conditions. Should global temperatures rise further, such extreme droughts could become a near-annual occurrence.

This shift is not merely statistical; it is existential. Water systems designed for a more stable climate are

now operating under conditions they were never built to withstand. Reservoirs empty faster. Soils dry out more quickly. Crops demand more water at precisely the moment it becomes scarcer.

Climate change, in this sense, acts as a force multiplier—exacerbating every existing vulnerability.

Cities on the Edge

Nowhere is the crisis more visible than in Iran’s major cities. Tehran, a sprawling metropolis of around 10 million people, consumes nearly a quarter of the country’s water. Its growth has outpaced the capacity of surrounding water systems to sustain it. Authorities have already warned that several major cities, including Tehran, could approach “water day zero” if current trends continue. The term, once associated with crises in places like Cape Town or Chennai, now looms over Iran’s urban future.

The government has floated extraordinary measures. Among them: relocating the capital to the southern Makran coast. The proposal underscores the scale of the challenge. When a nation contemplates moving its political centre to secure water access, it is an admission that existing systems are nearing their limits.

Public frustration has boiled over into protests, often met with force. For many Iranians, water scarcity is not an abstract policy issue but a daily reality—felt in dry taps, failing crops, and rising living costs.

War Enters the Equation

As if climate and mismanagement were not enough, conflict has introduced a new layer of uncer-

tainty. Recent attacks on desalination plants in Iran and across the Gulf have highlighted the vulnerability of water infrastructure in times of war. While Iran itself relies relatively little on desalination—accounting for only a small fraction of its drinking water—the broader region is heavily dependent on the technology.

In countries such as Kuwait, Qatar and Oman, desalination provides the vast majority of potable water. Damage to these facilities can have immediate and severe consequences, disrupting not just water supply but also sanitation, public health, and economic activity.

Within Iran, the impact is both direct and indirect. Strikes on infrastructure—whether water facilities, power plants, or supply chains—can quickly cascade into shortages. Desalination plants, for instance, are energy-intensive; disruptions to electricity can halt water production altogether.

Experts warn that the conflict is “straining an already fragile system”. Iran entered this period with depleted reservoirs, exhausted aquifers, and prolonged drought. In such a context, even minor disruptions can have outsized effects.

War, in short, does not create the crisis—but it accelerates it.

The Illusion of Technological Fixes

Faced with mounting pressure, Iran has turned to technological solutions, including cloud seeding and expanded desalination. While such measures may offer short-term relief, they do little to address the un-

derlying imbalance between supply and demand. Cloud seeding, for example, may increase rainfall marginally in targeted areas. But it cannot replenish depleted aquifers or reverse decades of overuse. Similarly, desalination—while valuable in coastal regions—is expensive, energy-intensive, and limited in scale relative to the country’s overall needs.

The deeper issue is not the absence of technology, but the absence of sustainable management.

A Path Forward—If There Is Will

Despite the gravity of the situation, solutions do exist. Experts broadly agree on the direction of reform, even if implementation remains politically challenging.

First and foremost is the need to reduce water consumption, particularly in agriculture. This could involve phasing out subsidies that encourage overuse, adopting more efficient irrigation techniques, and shifting away from water-intensive crops.

Second, Iran must invest in wastewater treatment and reuse. Recycling water for agriculture and industry can significantly reduce pressure on freshwater sources.

Third, there is a need to restore and protect natural systems. Reviving elements of the qanat network, improving aquifer recharge, and reducing land degradation can help rebuild resilience over time.

Finally, and perhaps most critically, water governance must be elevated as a national priority. This requires not just technical adjustments, but a reallocation of resources and political attention. As some experts note, the primary obstacle is not a lack of knowledge, but a lack of alignment between policy priorities and environmental realities.

The Cost of Inaction

The stakes could hardly be higher. Water scarcity is not an isolated environmental issue; it is a catalyst for broader instability. It affects food security, public health, economic productivity, and social cohesion.

In Iran, the warning signs are already visible: protests, migration pressures, and declining agricultural output. If left unaddressed, these pressures could intensify, with consequences extending beyond national borders.

The Middle East, after all, is one of the world’s most water-stressed regions. What happens in Iran will reverberate across its neighbours, particularly as climate change continues to tighten its grip.

A Moment of Reckoning

Iran’s water crisis is, in many ways, a story of missed opportunities. A country that once pioneered sustainable water management has, over decades, drifted toward practices that undermine its own future.

Yet it is also a story still being written. The concept of “water day zero” serves as both warning and catalyst. It marks the point at which crisis becomes undeniable—but also the moment when decisive action becomes unavoidable.

Whether Iran can avert that day will depend not on rainfall alone, nor on technological innovation, but on the willingness to confront hard truths and make difficult choices.

The taps have not yet run dry. But the margin for error is narrowing—and time, like water, is running out.