THE NATURAL RESOURCES AND SECURITY NEXUS

The nexus between natural resources and security needs to be better understood and more closely monitored. Climate change exacerbates environmental challenges and natural resources scarcity which are contributing factors to the onset of political violence both within and between states. A more granular grasp of the dynamics involved in these risk multipliers through the use of integrated datasets will allow for enhanced situational awareness and enable timely action. It requires concerted action and closer coordination by vital political, military, diplomatic and societal stakeholders from the public and private sector across the globe. This Issue Brief summarizes the key takeaways of a meeting of a Global Expert Group that convened at the Future Force Conference held in The Hague, The Netherlands, in February 2017. The Brief highlights the contributions by principal experts from the panel and the audience and outlines ten recommendations for future action.

INTRODUCTION

Current geopolitical developments attest to how the issues of natural resource scarcity, climate change, vulnerability, and conflict are intertwined. Development experts, military analysts, and diplomats increasingly recognize natural resources as a key contributing factor to disputes within and between countries, with potentially significant consequences for international, regional, and national peace and security. Environmental factors are rarely the sole cause of tensions or violent conflicts. However, the exploitation of natural resources and related environmental stresses can be implicated in all phases of the conflict cycle, from contributing to the outbreak and perpetuation of violence to undermining prospects for peace. In many regions across the globe the impacts of climate change and increasing water scarcity, among others, are likely to increase the potential for conflict related to access to, and distribution of, natural resources that are vital for economic growth and human well-being. Hence, the international community must be prepared to better predict, prevent, and if needed, confront, the higher risks of resource-related tensions.

This issue brief addresses three key questions, the answers to which help to devise appropriate policy responses to risks emanating from the natural resources and security nexus:

i) How likely are water-related conflicts to erupt in the next future, and what other natural resources are most likely to be related to instability, under what circumstances, in which geographical areas and with what consequences?
ii) Can the big data revolution play a part in enhancing our predictive capabilities in regards to resource-related tensions and conflicts?
iii) What is the role of armed forces in addressing the interconnections between natural resources and security? Formulated more generally, how do we proceed from theory to practice?

The following discussion is based on the breakout session *The Natural Resources & Security Nexus* at the *Future Force Conference 2017*, and supplemented by additional research. Moderated by Kitty van der Heijden (World Resources Institute) and Tim Sweijs (*The Hague* Centre for Strategic Studies), the high-level expert panel of the breakout session included Major General Munir Muniruzzaman (rtd.) (Global Military Advisory Council on Climate Change), Dr. Jamie Shea (NATO), Mr. Najib Saab (Arab Forum for Environment and Development), Mr. Alexander Verbeek (Stockholm Environment Institute) and Mr. Charles Iceland (World Resources Institute). The audience actively took part in the discussion by means of the mobile app 'Mentimeter'. Through this app approximately 100 participants, of which 37% considered themselves experts on the resources and security nexus when polled and 44% had some knowledge on this topic, were invited to actively participate in the debate. 60 participants did so using the Mentimeter app.

This issue brief is structured as follows. The next section provides an overview of the main issues raised in the speakers' keynote contributions. Subsequently, core issues related to the natural resources and security nexus, the potential contribution of big data and the role of the military are addressed in more detail along the six questions posed to the audience. Finally, we present the main policy recommendations emerging from the discussion.

KEY CHALLENGES ACCORDING TO THE EXPERT COMMUNITY

The keynote speeches of Major General Muniruzzaman (rtd.), Dr. Jamie Shea, Mr. Najib Saab and Mr. Charles Iceland at *The Natural Resources & Security Nexus* breakout session provided a comprehensive overview of the main challenges related to climate change and other natural resources-related challenges as risk multipliers for tension and conflict as well as possible solutions.

A growing world population, unsustainability of current consumption patterns in affluent communities, including water and food waste, and rapid urbanization are among the key challenges of the 21st century that Major General Munir Muniruzzaman highlighted. He placed a particular emphasis on the role of attitudes behind over-consumption: *"The problem is the greed at the individual, societal and the national level."* Moreover, Major General Muniruzzaman emphasized the inequality of access to natural resources, both on the inter-state level and within countries. He pointed out *"the emergence of regional water hegemons"* and of *"water elites"* within societies. In geographical terms, Major General Muniruzzaman focused on the challenges in South Asia, in particular the disagreements between India and Pakistan on sharing transboundary water resources and the construction of dams.

Dr. Jamie Shea raised the issue of a lack of institutionalized multilateral fora where experts from the security, climate change and environment, diplomatic, and other communities can work together to develop solutions. It is necessary to begin creating such linkages. Thereby, the Netherlands can be *"the driver of this integrated debate"*, as it performs high in international comparison in terms of creating ecosystems across different stakeholder groups. Moreover, Dr. Shea mentioned that there is no comprehensive approach yet to coordinate possible responses of the military. While improving coordination of the armed forces is important, stepping up climate diplomacy will remain crucial in the future. Thereby, a particular challenge lies in aligning short-term agendas – which all too often drive politics – and long-term sustainability considerations.

The challenges in the MENA region, including water scarcity, sea level rise and other impacts of climate change on human health and security were addressed by Najib Saab. He highlighted the question whether the various crises in the MENA region were *"instigated by the early impacts of climate change or just aggravated by these factors"*. A central message of Mr. Saab's keynote speech was that *"countries will fail if we do not invest in people-centered development."*

Finally, Mr. Iceland gave an overview of Aqueduct, the global water risk mapping tool developed by the World Resources Institute (WRI) and widely used by governments, research institutions and civil society organizations. Zooming in on a recent analysis of water scarcity in the MENA region, he showed how Aqueduct can be used to predict water-stress and highlighted several risk mitigation measures which can be taken now to avert water-related crisis in the future.

IS THERE A SERIOUS RISK OF TRANSBOUNDARY WATER WARS IN THE FUTURE?

"There is no security without water security." (Kitty van der Heijden)

Experts on the natural resources and security inter-linkages agree that there is an urgent need to find solutions to the challenges of water security. Water insecurity primarily derives from water scarcity. According to the UN, by 2025 1.8 billion people will be living in geographical areas with absolute water scarcity, and two-thirds of the global population could be living under conditions of water stress.[1]

Yet despite this knowledge, water gets too little media and political attention compared to other security risks. In a historical perspective, wars between peoples and nations over resources, including rivers and other fresh water sources, is not a new phenomenon. One prominent historical example includes the "war over water" between Israel and several Arab states to gain control of the Jordan River basin in 1964-1967. Yet what gives the issue of water security a particular urgency in the 21st century is the fact that water availability is put at risk by increased demand due to population growth, urbanization and changing consumption patterns in affluent parts of society across the globe, as well as the impacts of climate change. Sharing water resources, which by nature do not abide by administrative boundaries, is crucial for stable economic growth and human well-being, and thus for societal stability. But if access to, and control over, water resources is perceived as a zero-sum game, it may heighten tensions across borders. In fact, 89% of our audience at *The Natural Resources & Security Nexus* breakout session strongly agreed that there is a serious risk of transboundary water wars in the future (Figure 1).

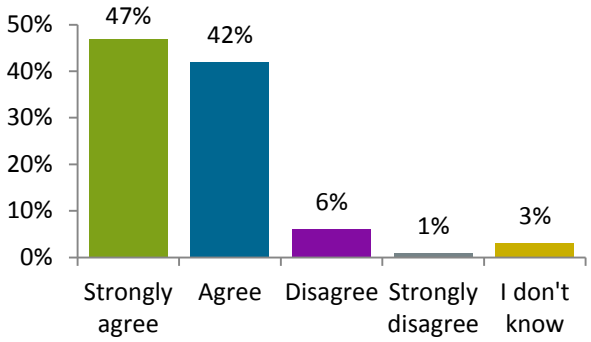

Figure 1: Is there a serious risk of transboundary water wars in the future?

Four particularly pressing issues need to be highlighted with respect to water security. First, there is an increasing problem of water inequality. This is in part a natural phenomenon, as water isn't distributed in proportion to population density. For example, 20% of the world's fresh water is found in the Amazon region, where few people live, whereas densely populated India has only 4% of the worlds' freshwater resources.[2] And while harnessing water for productive use is central to the economic ambitions of many countries, new infrastructure is not intrinsically positive for communities, if entitlements are eroded and the benefits from water are captured by powerful groups. The key example in Asia is China, the world's biggest dam builder – with slightly more than half of the approximately 50,000 large dams on the planet –

undertaking massive hydro-engineering projects on transnational rivers.[3] Within countries, *"water elites"* have emerged along the socio-economic division between the wealthy and the poor. To have the highest effect, strategies to improve water security need to be inclusive.

Second, as Mr. Najib Saab emphasized, the issue often is not water scarcity as such, but inefficient water management and waste. An important example here is the MENA region. Since irrigated agriculture accounts for the biggest share of water use, few supply-led technological responses that are being implemented include water diversions, damming and desalination. Still, about 50% of water in the region is wasted. In this regard, countries can learn from Israel, where nearly 90% of water is reused[4], and from the Netherlands, which developed highly efficient drip-irrigation for agriculture.

Third, water security is closely related to food security, given that water is needed for irrigation in agriculture. With global population growth expected to reach the mark of 9.7 billion people in 2050[5], the demand for agricultural products such as food, fuel and fodder will also continue to rise. The combination of increasingly scarce water, especially in certain geographical locations, and the need to expand food production to feed growing, and more affluent societies, can potentially heighten the risk of conflict over shared natural resources required for food production (land, water, forest). Food insecurity may lead to large-scale migratory movements from rural to urban areas, as well as across boundaries (see below). But water security is not only an issue in rural areas. Urban areas, particularly megacities, also face increasing water challenges, with 1 out of 4 cities in the world facing water stress of some sort.[6]

Fourth, if the past is an indicator of the future, there is a glimmer of hope. The United Nations estimates that the period between 1954 and 2004 has seen only 37 acute disputes over water involving violence, compared to 150 treaties that have been signed.[6] As an example, the Indus Water Treaty between India and Pakistan concluded in 1960 survived two wars between these countries.

The prevalence of peaceful conflict resolution for transboundary water issues in the past does not, of course, mean that this tendency will necessarily continue into the future. With growing populations and increasing demand for water, combined with supply-side risks from climate change, the future may not look like the past. And often, such treaties lack monitoring provisions, enforcement mechanisms and specific agreements that address variations in water flow and changing needs. The Indus Water Treaty, for instance, has recently come under strain over two hydropower projects by India. To resolve the disagreements in this and other cases, diplomatic efforts must ensure that international law and arbitration remain the means by which conflicts over water resources are resolved.

IS ECOSYSTEM DEGRADATION AN INTER-STATE OR AN INTRA-STATE CHALLENGE?

Conflict over water can be a major challenge in inter-state relations. Yet is ecosystem degradation more broadly primarily a transboundary issue or rather a challenge to be solved within nation states? The answer to this question determines if policy responses should take place at the national level or emanate from institutions of global or regional governance.

Among our audience, only 5% think that ecosystem degradation is largely an intra-state risk. Only a slightly higher share of 10% believes that it is largely an inter-state issue. The overwhelming majority of 80% replied that it was both an intra- and an inter-state security challenge (Figure 2).

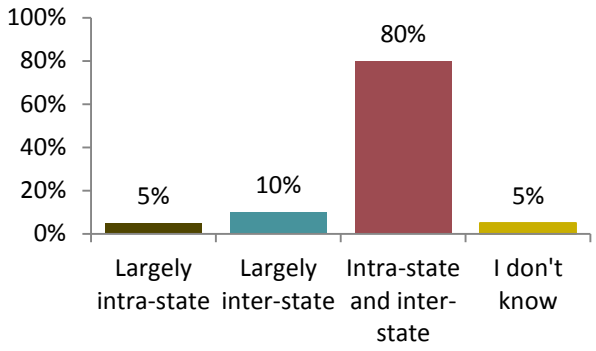

Figure 2: Is ecosystem degradation largely an intra-state rather than an inter-state security challenge?

Which challenges does ecosystem degradation pose at the intra-state level? Environmental issues of concern to local settings generally revolve around immediate matters that threaten their livelihood and survival. Examples of problems that can directly or indirectly impact on human well-being include deforestation, soil degradation, depletion of fresh water, and pollution of air and water systems. While the origins of ecosystem degradation may lie outside of the borders of a country, addressing the impacts on economic growth, as well as people's lives and livelihoods, is part of a national action agenda, supported by various international means (finance, capacity building, etc.). Some challenges however are directly related to national policies and practices – or lack of enforcement thereof – such as deforestation and urban water leakage.

Both at the inter-state and intra-state level there is the risk of civil unrest and uprisings sparked by the degradation of habitats. In fact, according to the recent documentary *The Age of Consequences* by Jared P. Scott, climate change causing drought was one of the factors that enhanced poverty and inequalities, and thus added to the simmering dissatisfaction of the Arab populations that sparked the Arab spring.

At the inter-state level, security challenges first emerge from competing interests of states over shared, scarce natural resources, often in combination with geo-political tensions between countries where these resources are located, and those countries that need them to enhance or sustain economic growth. It is by now widely acknowledged that oil has often been an important conflict driver, for instance in the Iraq-Kuwait War. Access to natural resources more broadly – including hydro-carbons but also fisheries – is currently at stake in various maritime disputes in the South China Sea.

DOES MIGRATION INDUCED BY NATURAL RESOURCE CHALLENGES UPROOT GLOBAL, REGIONAL AND NATIONAL STABILITY?

It is widely recognized that human mobility, in both its forced and voluntary forms, is increasingly impacted by environmental and climatic factors. Migration induced by natural resource challenges may take many complex forms: forced and voluntary, temporary and permanent, internal and international. In recent years, migratory movements have reached an unprecedented level, unseen since the Second World War.

Due to the wars in Syria and Libya the problem has a particular urgency in the MENA region, with millions of refugees uprooted from their homelands, desperate for the prospect of a dignified life. Some are trying to reach Europe, but much higher numbers remain in the region. In Lebanon, the fourth largest city is now a refugee camp. The soaring numbers of refugees in Sub-Saharan Africa are another challenge that needs to be addressed to ensure the world delivers on the promises embedded in the Sustainable Development Goals agreed in 2015.

Experts at *The Natural Resources & Security Nexus* breakout session agreed that countries need to be prepared for even higher levels of migration in the future due to the *"lack of space, lack of resources and lack of food"* (Major General Munir Muniruzzaman). Moreover, 88% of the respondents in our audience agreed or strongly agreed with the statement that migration will uproot global, regional and national peace and stability.

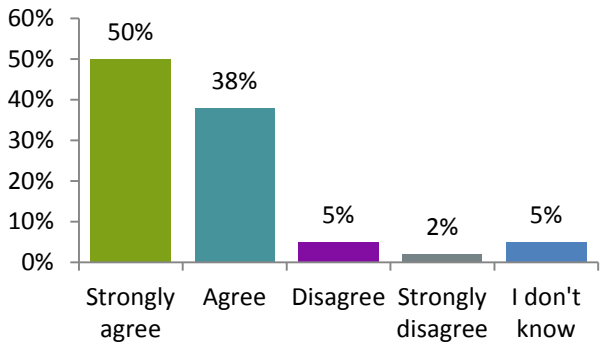

Figure 3: Does migration induced by natural resource scarcity and ecosystem degradation uproot global, regional and national stability?

While migration is often confined to the intra-state and the regional scale, the international community should take effective action to support countries in the implementation of the SDG agenda and to achieve net zero emissions by mid-century, or global migration will increasingly become a geopolitical and security problem.

Currently, a key obstacle in finding solutions is that there seems to be waning international support to enable all countries to undertake the low-carbon economic trans-formation that is needed, and no agreement upon a clear definition of refugees that leave due environmental pressures. This renders concluding international agreements and establishing guidelines unnecessarily cumbersome.

WHERE ARE NATURAL RESOURCE CHALLENGES MOST LIKELY TO RESULT IN CONFLICT?

In order to come up with targeted policy responses, it is crucial to understand in which region(s) natural resources-related challenges are most likely to result in conflicts. 75% of our audience think that South Asia is at the highest risk for conflict eruption over natural resources. 72% believe that it is Africa, and 65% chose the MENA region (participants could select up to 3 regions). Europe, Central Asia (7%) and Latin America (5%) are seen as low-risk geographies, whereas 18% see the Arctic region as a potential flashpoint (Figure 4).

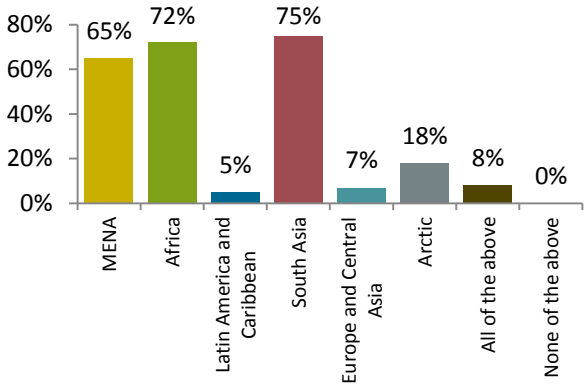

Figure 4: In which regions (up to three choices) are natural resource-related challenges most likely to result in conflict?

Three region-specific issues are particularly interesting to highlight. In the South Asian context, next to the long-standing territorial dispute over Kashmir between India and Pakistan, the fact that both countries are nuclear powers is particularly worrisome. Any major escalation in this region bears the risk of lowering the nuclear threshold. Another major challenge in South Asia is posed by the situation of Bangladesh – one of the

countries which in global comparison are the most vulnerable to climate change effects such as sea-level rise and extreme weather conditions, including storms and cyclones.

Overall, Africa will be the continent the most affected by climate change, among others, by drought, desertification and flooding.[7] The disastrous effects of global warming are likely to be further exacerbated by extreme poverty and low levels of socio-economic development, which make it difficult to devise innovative and effective responses.

Lastly, recent developments in the Arctic – which the general public is hardly aware of – are of high geopolitical relevance, creating a new framework for countries' global strategies. The rate of 9% per decade at which polar ice caps are melting according to NASA is alarming, with the ice thickness having decreased by 40% since the 1960s.[8] What is at stake in the Arctic are, first, hydrocarbon resources, including oil, natural gas and liquefied natural gas (LNG), which are expected to become accessible as ice gradually melts. Second, a key point of interest are trade routes, including the Northwest passage along Canadian shores and the Northern Sea Route through Russian waters. According to Mr. Alexander Verbeek, we can expect a growing military build-up in the Arctic, with Russia currently being the most engaged in the region. Next to US interests, China is another resource-hungry player paying close attention to the Arctic and also increasing its engagement in Greenland.

DO WE HAVE THE RIGHT DATA TOOLS TO PREDICT AND PREVENT NATURAL RESOURCE-RELATED CONFLICT?

Knowledge lies at the root of the power to act and change. To prevent natural resource-related conflict we must have sufficient and reliable information on its possible location, likelihood, the actors involved and the aggravating and mitigating factors. The purpose is both to understand the complex dynamics associated with resources-related conflicts and to increase our ability to predict their eruption. Do we currently have the right tools at our disposal? 54% of our audience disagreed with this statement, and 19% strongly disagreed. Only 13% agreed or strongly agreed that currently available data tools are sufficient.

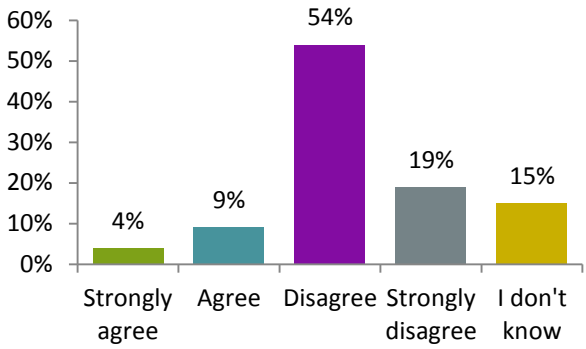

Figure 5: Do we have the right, integrated data tools to predict and prevent natural resource-related conflict?

In fact, studies highlight that there are still few analytical and data gaps on the impact of natural resources on conflicts.[9] First, there is a lack of issue coding in existing conflict data, which means that existing studies often do not explicitly identify whether the issue over which tensions broke out is related to environmental causes. Second, conflict data often only capture rather large-scale conflict events, or those that involve one government actor on at least one side of the conflict, leaving aside other types of events, such as demonstrations, riots and various forms of organized violence. For these reasons, it is important to make sure that the relevant actors and the public are aware of the analytical tools currently available and work together to continue improving and expanding their analytical capabilities. The expert panel at *The Natural Resources and Security Nexus* breakout session seemed to agree with this picture.

Dr. Jamie Shea highlighted that a wide variety of publicly available datasets and information tools used by organizations such as NATO – e.g. satellite mapping – already exist. Rather than availability of data and tools, what we are missing are efforts to integrate the existing material. To make viable predictive models, one needs to adopt a comprehensive, cross-disciplinary approach, which next to security, geography and economics makes use of data on sociology, local culture and politics. This is of particular importance because the causal arrow' may not (only) run from natural resource to conflict, but also point in the opposite direction. Conditional effects on conflicts that could result from economic and political factors are often neglected in studies on the natural resource and security nexus.[10] For instance, understanding the role of governments in managing and re-distributing scarce resources is key to reach more accurate predictions or policy prescriptions. Finally, while predictive models can be highly valuable, policy-makers and analysts must keep in mind that not every single conflict can be predicted. This is due to short-term political escalatory dynamics which can be decoupled from 'the material and social base' reflected in the data.

WHICH TASKS SHOULD THE ARMED FORCES FOCUS ON IN ADDRESSING NATURAL RESOURCE CHALLENGES?

Moving from analytical and methodological considerations to concrete action, a key question coming to mind concerns the possible role of the armed forces – the main guarantors of stability and security – in dealing with resource-related security risks. One simple and straight-forward option for the military would be to become aware of its own ecological footprint and to begin reducing it. While this fact often remains unaddressed, military operations represent a large source of pollution and carbon emissions. For instance, according to one estimate, the environmental footprint of the Iraq war was as heavy as 250-600 million tonnes CO2.[11] However, only 22% of our audience think that reducing its own footprint should be one of the three core focal points of the military (Figure 6).

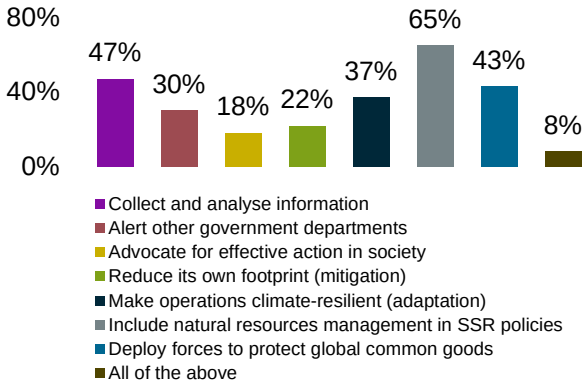

Figure 6: Which tasks (up to three) should the armed forces focus on in addressing natural resource challenges?

Instead, the majority (65%) of participants answered that it should be a priority for the military to include natural resources management in security sector reform (SSR) policies. 47% believe that one of the central responsibilities of the armed forces is creating knowledge about climate change trends and the resources-security linkages by collecting and analyzing information. 43% think that it is key to deploy military forces to protect global common goods.

Importantly, Major General Muniruzzaman pointed out that in most societies, the military is one of the most efficient and high-performing actors. Therefore, there is a wide scope for it to make a positive impact in addressing the natural resources and security nexus. Yet at the same time, military action necessarily requires political coordination. Armed forces – at least outside of military dictatorship – cannot act if it is not asked by the political actors in power to step in. Currently, as Dr. Jamie Shea highlighted, the political coordination of military forces with regard to climate change-related action is insufficient, both at the country level and at the inter-national level. The latter will be of particular importance in the future. Climate diplomacy, therefore, needs to be deepened and expanded. Only then – and after a comprehensive international debate on its role – can the military undertake meaningful and truly impactful action to address the interlinkages between natural resources and security.

POLICY RECOMMENDATIONS

Based on the preceding discussion, the following ten policy recommendations for the Dutch government as well as for research institutions, the private sector and civil society organizations whose work is related to the natural resources and security nexus can be formulated:

1. **Mainstream the issue in politics and in national and international institutions.**
   Given their enormous implications, the linkages between climate change, natural resources and conflict should occupy a more prominent position on the political agenda.
2. **Advocate for the creation of a Natural Resource-Security unit within the United Nations**.
   The Dutch government should take a prominent role in contributing to the creation of an institutional home for natural resources and security matters within the United Nations, aimed at developing field reporting and early warning mechanisms for the UN Security Council to predict potentially problematic situations.
3. **Promote and step up the integration of data from different sources.**
   The crucial issue today is not the lack of information, but the absence of successful data integration. Thereby, it is important to adopt a comprehensive approach taking into account not only environmental and security but also political, sociological, economic and cultural data.
4. **Recognize the important role that military forces have to play in addressing natural resource-related conflicts.**
   The military is one of the most efficient actors in our societies, and we must make use of this strength. This should also be communicated effectively to the public. Furthermore, the Ministry of Defence – in close coordination with the Ministry of Infrastructure and Environment and the Ministry of Foreign Affairs – should continue to take action to deepen and broaden its in-house knowledge on climate security.
5. **The three key areas of activity for the military should be i) collecting and analysing information; ii) protecting global common goods; and iii) including natural resources management as an integral part of SSR.**
   These should be incorporated into the defence and security strategy by the responsible ministries and be reflected in the organization of the military on the operational level, for which actors on the military-strategic level are responsible.

6. **Military action towards natural resources related challenges must be better coordinated by political actors, both nationally and internationally**. A common shortcoming in the response to climate-related disasters has been a lack of 'political mandate' that would have allowed the military to implement timely actions. Promoting international coordination and agreement on military responses to natural resources related crises, is key to mitigate and prevent.
7. **In increasingly institutionalized frameworks, actors from the government, the military, research institutions, private sector and civil society should work together to find solutions to resource-related challenges.**
   The best policy solutions are those that take into account a wide range of different perspectives. Promoting multi-sector international fora such as the Future Force Conference should continue in the future.
8. **Climate diplomacy should occupy a central position in the foreign policy of The Netherlands.**
   Impactful action against negative effects of climate change can only be achieved through extensive international cooperation, thus serving peace and stability, as well as planetary security.
9. **Link policies addressing the natural resources-security interlinkages with development policies aiming at people-centred development in poor regions of the globe.**
   An approach connecting security to development is necessary, as the combination of poverty and ecosystem degradation is a particularly vicious and explosive one. We need to focus on people's needs and security, and promote stronger south-south cooperation among countries.
10. **In our efforts we need to strive to align the long-term vision of a clean, secure and cooperative planet with the often prevailing short-term considerations driving national and international politics.**
    It is urgent that the broader societal and security risks of environmental degradation are well understood, so that long-term-oriented and sustainable approaches to mitigate these risks can be integrated within the current political agenda.

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