

Open Skies review

Representatives of the 34 states parties to the Treaty on Open Skies met in Vienna 7-9 June 2010 for the second five yearly Review Conference. At the opening of the meeting, which was chaired by the United States, Secretary of State Hillary Clinton expressed strong support for the Treaty in a video address (www.osce.org/conferences/open_skies_2010.html). The contrast to the May 2010 NPT Review Conference was striking since there were no controversies which might have questioned the regime itself. The focus was rather on past and future implementation. Here the main challenges are the replacement of ageing aircraft and the transition from using film-based to digital aerial cameras. This transition is overdue and market driven, since some major companies have begun to terminate production of some aerial films, as well as the chemicals used for developing them.

Going digital

Over the last five years, the Informal Working Group on Sensors (IWGS) of the Open Skies Consultative Commission has developed detailed procedures for certifying digital aerial cameras and thermal infrared imagers with digital readout. The conference's Final Document—which was adopted unanimously—emphasized the need for this transition, which, however, is confronted with budgetary constraints in many countries (see www.osce.org/documents/sg/2010/06/44736_en.pdf). The difficulty of funding this modernization is indicative of the political status of the treaty in many of its member states. While the treaty was initially promoted by heads of government, high level support—crucial for committing additional funding—is now dwindling in many countries. Open Skies implementation is executed by the (often small) arms control verification units of the respective defense ministries. In times of tight budgets, arms control and military confidence building often struggle to be seen as priority areas in the defense establishments' security considerations and plans. Nevertheless, the transition to digital sensors will go ahead. Norway, for instance, intends to equip its newly assigned Open Skies aircraft, a P3 Orion,

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In this issue

Hartwig Spitzer returns to deliver an update on the progress of Open Skies implementation, Justin Alger discusses the safeguards and non-proliferation implications of the nuclear revival. Also verification watch, verification quotes, science and technology scan, centre news and events as well as a note from the Executive Director.

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with digital sensors by 2011/12. Russia has firm plans to go digital. Meanwhile, states like the US, Sweden, Turkey and a group of nine other states (from Western and Southern Europe, and Canada), which use a common sensor pod, are studying the technical and budgetary feasibility.

Three types of digital sensors are envisaged:

- Digital aerial cameras in the wavelength range from 0,3 to 1,1 micrometers (optical and near infra-red) at a ground resolution (ground sampled distance GSD) of 30 cm (these cameras are referred to as digital video sensors in treaty language);
- Thermal infrared imaging sensors in the wavelength range from 7 to 15 micrometers at a ground resolution (GSD) of 50 cm;
- Imaging radar, Synthetic Aperture Radar (SAR), at a ground resolution of 300 cm. (For a detailed explanation of Thermal and SAR sensors in the context of Open Skies see VERTIC Brief No.8, by Hartwig Spitzer, 2009)

Just a few weeks before the conference, the Open Skies Consultative Commission adopted a decision (OSCC/DEC/6/10) on the specifications and certification procedures for digital aerial cameras drawn up by the IWGS. The decision allows for cameras with up to four spectral channels (blue, green, red, near infra-red) as well as panchromatic capabilities. Such cameras offer enhanced capabilities for recognizing military objects, infrastructure and camouflage when compared to the black-and white film cameras currently used. The new sensors could also support the study of land use, vegetation, and water pollution in order to monitor effects of military activities or for purposes of general transparency. On the insistence of the Russian Federation, the decision also contains certain provisions to impede hyperspectral capabilities which would enable identification of specific chemical substances (such as minerals) by their spectral reflection properties (spectral lines of a few nanometers width). The above specifications for digital cameras for Open Skies use are now met by most commercial digital aerial cameras which dominate the market for non-military aerial remote sensing. Cameras with a so-called Bayer filter, which collect images in three spectral bands on one sensor matrix, are allowed as well.

When introducing new sensors into Open Skies, determination of the ground resolution is a key issue. For digital cameras and thermal imaging sensors, ground resolution depends on flight altitude: the lower the altitude, the better the resolution. Consequently, in order to ensure that images are at a resolution allowed by the treaty, the corresponding flight altitude has to be determined in advance. To do this, a target which contains groups of bars of increasing width is over flown at different altitudes. Targets for digital aerial cameras consist of alternating black and white bars. Targets for thermal sensors consist of alternating warm and cold bars. Observers from different states parties can then analyse images of the target taken during the flights to determine the group of narrowest bar width discernable by the sensor (a process known as 'resolution reading'). This enables the appropriate flight altitude to be established and the corresponding camera configuration to be certified. The procedures of resolution reading from digital images are specified in decision OSCC/DEC/8/10.

Since a 'certification event' is limited by treaty to seven days, time constraints and bad weather can hamper the (statistical) accuracy of the result. The decision on certification seeks to mitigate this constraint by requiring states parties to establish an extensive database of resolution values at different flight altitudes for each particular camera configuration in advance and to communicate the results at least 60 days before the multinational certification event. The one week certification event would then only be used to cross check the results with a small number of flights and to establish the minimum allowed altitude for observation missions.

A further decision of the OSCC specifies the formats for data exchange between parties (OSCC/DEC/9/10). Raw image data must be erased once they have been processed and distributed in the official exchange format in order to make sure that all parties have access to the same kind of images.

Other issues

During the conference, a number of other issues were dis-

cussed, including the so-called ‘other applications’ and also the accession of additional member states. The preamble of the treaty envisages the ‘possible extension of the Open Skies regime into additional fields such as protection of the environment’, though this option has never been operationalized in treaty decisions. However, several states have performed disaster monitoring flights on a national or bilateral basis. The US Open Skies aircraft flew extensive disaster-monitoring and disaster-relief support missions in the aftermath of hurricanes Katrina and Rita in 2005, and, most recently, after the earthquake in Haiti earlier this year. However, these were nationally-mandated flights lying outside the treaty’s provisions. There is little chance that post-disaster or environmental monitoring flights will become part of treaty implementation within the present framework of quota flights (which gives each party the right to perform an agreed number of flights over other parties). Disaster monitoring with Open Skies aircraft will remain an exception in view of available national capabilities like radar satellites and other civilian and military observation aircraft.

The most recent accession to the treaty was that of Lithuania in 2005. Cyprus’ application is pending since 2002, due to a veto by Turkey. This situation was one of the few controversial issues at the conference. After all parties had agreed on a final document, an interpretative statement on behalf of 32 states parties was read. The statement expressed explicit support of Cyprus’ application and the hope that consensus on the application can be obtained in the near future. In response, the Turkish delegate expressed ‘dismay that an issue that lies outside the scope, mandate and purview of the Open Skies bodies and of the Review Conference has been brought to the Closing Session’.

The final document mentions also ‘that the Treaty might serve as a model for aerial monitoring regimes in other regions of the world in order to promote security and stability.’ The document states that the states parties are ‘prepared to enter into dialogue with interested parties in order to share experience, to exchange general information about the Treaty and its benefits and to provide advice on cooperative aerial observation’. In practice, there has been little

activity lately in this direction. Between 1996 and 1999, the United States undertook various initiatives by displaying its Open Skies aircraft in Japan, China and in South America and by briefing governments on the Open Skies treaty in Eastern and Southern Asia as well as in South America. These activities were not followed up under the Bush administration. Currently, the Obama administration and governments of other states parties are open to exchanging general information about the treaty worldwide. It remains to be seen to what extent governments in other parts of the world come to appreciate the Open Skies model as a strong confidence-building measure supporting regional transparency in security matters—and to what extent they consider applying a similar arrangement in their own regions.

In summary, the conference proceeded fairly harmoniously, especially in comparison with the 2005 Review Conference (which failed to reach consensus on a final document due to a Turkish veto on the Cyprus accession issue). Open Skies officials and practitioners have learned to work with each other. In addition, it is clear that both the US and Russia, as well as the other parties, adhere to the treaty’s objectives and substance, and see it as an asset. There was, however, no discussion of the larger political environment of Euro-Atlantic security in which the Open Skies Treaty operates. The treaty will, nevertheless, continue to play a significant part in the monitoring of conventional arms control in Europe as well as in the area of confidence and security building, especially given the enhanced sensor set that can now be used.

Hartwig Spitzer.

Hartwig Spitzer is the spokesperson for the Center for Science and International Security (CENSIS) and an associate member of the Carl Friedrich von Weizsäcker Center for Science and Peace Research at the University of Hamburg, Germany. He is also a professor in the Department of Physics at the University of Hamburg. He has attended the 2005 and 2010 Open Skies review conferences and participated in sessions of the Open Skies Consultative Commission’s Informal Working Group on Sensors since 2005.

The 'nuclear revival': taking stock, managing concerns

The so-called 'nuclear revival' is considered by some observers to be the next major challenge for the nuclear non-proliferation regime. It is considered by some to set in motion the rapid diffusion of nuclear technology to states in volatile regions, namely North Africa, Southeast Asia and the Middle East. It is, some argue, likely to cause these states to engage in 'nuclear hedging', that is, the deliberate stockpiling of nuclear capacity and expertise to keep open the option of quickly building a nuclear weapon if security conditions take a turn for the worse. Iran's behavior, in particular, is seen as the potential catalyst for a nuclear 'tipping point', 'cascade' or 'proliferation epidemic' in the Middle East. The safeguards system of the International Atomic Energy Agency (IAEA) is already financially strained and is said to be incapable of handling the rapid influx of new nuclear facilities that comes with a nuclear revival. The non-proliferation outlook for this predicted revival has so far been, to say the least, rather pessimistic.

The pessimism of some in the non-proliferation community is juxtaposed by the extreme optimism of nuclear energy advocates with regard to the extent of nuclear energy's resurgence. The IAEA, for example, projects in its high-end scenario that nuclear energy generation will increase from its current 372 gigawatts electric (GWe) to 807 GWe by 2030. The World Nuclear Association's (WNA) high-end scenario predicts 1203 GWe of nuclear generating capacity by the same year. The Massachusetts Institute of Technology's (MIT) 2003 study predicted 1,000 GWe of nuclear by 2050, but in 2009 said that this was 'less likely' than they initially anticipated.

Historical projections for nuclear power capacity have invariably been overly optimistic. For example, the IAEA projected that during the 1980s—when more reactors were connected to the grid than any other decade—there would be 14 new countries using nuclear power with a combined low-end predicted capacity of 52 GWe by 1989. As it turns

out, the actual capacity of these countries by 1989 was just shy of 9 GWe, nearly 6 GWe of which belonged to South Korea alone, with reactors in only 4 of the 14 countries. However, the ability of the IAEA to make accurate projections is dependent on the predictions of its member states, which are often overly optimistic for political reasons. Past predictions, be they from the IAEA, governments or others have almost always been wrong.

The reality is that ten years into the forecasted 'nuclear revival' neither the optimistic projections for nuclear energy growth nor the pessimistic predictions for the non-proliferation regime's ability to cope appear to be accurate. Of course, the lack of any significant increase in nuclear energy production means that the predicted burden on the non-proliferation regime has not materialized, but the pessimism is unfounded regardless. Countries in which new nuclear build is taking place, or is expected to, are generally not considered proliferation threats because they are either existing nuclear weapon states, or already have well established nuclear industries and a demonstrated apathy towards possessing nuclear weapons of their own, like Canada or Japan.

The main proliferation concern—potential new entrants in volatile regions—have shown little rigour in pursuing their nuclear energy ambitions. The Survey of Emerging Nuclear Energy States (SENES) of the Nuclear Energy Futures (NEF) Project—a partnership between the Centre for International Governance Innovation (CIGI) and the Canadian Centre for Treaty Compliance (CCTC), Carleton University—currently lists 34 states pursuing nuclear energy. Of these, only Iran has actually made significant headway in the past decade to connect a nuclear power reactor to its electrical grid, but it began its ongoing quest to do so under the Shah in the 1970s. All states pursuing nuclear power will face some problems of cost, industrial bottlenecks, personnel constraints and nuclear waste, but

aspiring states face unique challenges of their own. Since many of these states are poorer, less developed countries, they often lack the institutional capacity, physical infrastructure and finances to support a large-scale, multi-billion dollar nuclear power plant project.

The risk, or concern, is that these new states will obtain the expertise in nuclear engineering and related disciplines that would allow them to go on to eventually develop nuclear weapons, most notably in the form of highly-trained scientists. Though the relationship between nuclear energy and weapons is complex, a nuclear power programme is nonetheless a potential stepping stone toward weapons development, and also a potentially highly effective cover for masking nefarious intent. Many fear that Iran is using its nuclear power programme for exactly that reason.

Despite these fears, if most aspiring nuclear energy states are not making any real progress towards acquiring nuclear energy then it goes almost without saying that the associated proliferation challenges of a nuclear revival are much less likely to materialize. This means that the burden on the IAEA and its safeguards system may not be as profound as many might expect.

IAEA safeguards

That the predicted revival in nuclear energy has not fully materialized, however, should not be taken as an indication that the IAEA, or its safeguards, are any less important. The humbler scale and pace of nuclear energy expansion still means an increase in the number of nuclear power reactors, increased trade and transport and perhaps more states with sensitive nuclear fuel cycle technologies. As new facilities are built, the IAEA will need to expand on its existing safeguards capacity.

The post-Gulf War emergence of the Additional Protocol as the highest standard of verification for the 1968 Nuclear Non-Proliferation Treaty (NPT) has gone a long way to improving the effectiveness of the safeguards system. It is a step closer to the 'anytime, anywhere' verification that was envisaged—but not enshrined—in the IAEA Statute. It is only sensible, then, that the first step in improving the cur-

rent state of safeguards is to try to increase the number of states implementing Additional Protocols, which as of September 2010 stood at 102. Regrettably, those states that do not have an Additional Protocol in force include 18 of the states in the SENES project.

Interest by these states in technical cooperation from the IAEA and from nuclear suppliers may be just the opportunity needed to convince them that an Additional Protocol is both worthwhile and important. The United Arab Emirates (UAE) seems to be setting an example, agreeing to have an Additional Protocol in place as a condition of supply in its nuclear cooperation agreement with the US. However, the Additional Protocol is not likely to become an absolute requirement for nuclear cooperation in the near future. Developing countries and particularly prominent non-aligned countries already feel overburdened by safeguards, and many chafe at what they view as an imposition beyond what is already expected of them by the NPT, seeing it as a form of inequality or even as a way of depriving them of technology.

As important as the Additional Protocol is, attempting to make it mandatory may be unproductive. Nuclear suppliers may, however, be able to incentivize the adoption of Additional Protocols through measures such as increased cooperation, assistance programmes and training, rather than through the imposition of punitive steps such as technology denial.

IAEA safeguards and nuclear export controls are an important part of the non-proliferation regime, and are effective in ensuring that states are responsible with their nuclear technology and material. They have proven invaluable in helping deter states that might otherwise consider the pursuit of nuclear weapons. These supply-side measures, though effective non-proliferation measures, are not as important as the reality that most states today simply do not want nuclear weapons. The demand, except in increasingly rare instances, is just not there, and the IAEA's relatively recent changes to its safeguards philosophy is perhaps in part a reflection of that.

For states in which the Agency has sufficient confidence that all nuclear activities taking place are intended for purely peaceful purposes, the IAEA's 'integrated safeguards' system streamlines monitoring activities, thereby allowing it to allocate resources more effectively to states with problematic nuclear programmes like Iran. It is also shifting towards what it calls information-driven safeguards, a more holistic approach to verification that involves analyzing information beyond traditional accounting methods, including undeclared activities and intelligence information provided by states. These two initiatives are exactly the right kind of efforts that the IAEA needs to make in order to cope with potential increases in the number of nuclear facilities it is responsible for safeguarding.

The IAEA itself is a veritable bargain for developed states, which primarily view it as a verification body. The Agency's 2010 budget was US\$444m, with an additional target of US\$158m in extra-budgetary contributions. To give an example of the return on investment that states receive for their money, in 2008 the IAEA had 237 safeguards agreements in place with 163 states covering 1,131 facilities, and conducted 2,036 on-site inspections.

The problems currently faced by the IAEA, revival or not, revolve primarily around resources, with the IAEA hampered by budgetary constraints imposed on it by many member states. If the number of new nuclear facilities is to increase even at a gradual pace, the IAEA will struggle to cope financially.

As former IAEA Director-General Mohammed ElBaradei cogently put it to the Board of Governors in 2009: 'I will be cheating world public opinion to be creating the impression that we are doing what we're supposed to do, when we know we don't have the money to do it.' Dr ElBaradei and a 2008 Commission of Eminent Persons both recommended a doubling of the budget by 2020 to account for the increasing safeguards burden placed on the Agency as new facilities are built. Such a doubling would probably be wise, and will certainly go a long way to assuage any enduring concerns about a possible nuclear revival, if member states can be convinced of its necessity.

Even when the IAEA's increasingly effective verification system successfully detects cases of non-compliance, international responses to them are not always effective. So far, determining the form that these responses take has been done on a somewhat ad hoc basis and with mixed results ranging from economic sanctions, military strikes and Security Council-mandated decommissioning programmes. Nuclear hedging presents an additional challenge: even if countries are pursuing nuclear power to hedge against regional rivals it is difficult to divine true intent because the technologies involved are inherently dual-use. Iran has done well so far to keep much of the world in doubt about its ultimate aim, despite being recently caught hiding a secret enrichment facility near Qom. Thankfully, Iran's behavior appears to be the exception rather than the norm.

Implications for non-proliferation

It is probably inevitable that at least a few new states will succeed in their ambitions to acquire nuclear power. The report of the CIGI-CCTC NEF Project, *The Future of Nuclear Energy to 2030 and Its Implications for Safety, Security and Nonproliferation* details the numerous constraints standing in the way of a substantive nuclear revival. In doing so, it identifies those aspiring states that are most likely to overcome those constraints and succeed in their nuclear ambitions, as Iran is poised to do. Though most aspiring states have so far only taken the easy steps towards acquiring nuclear power, the report identifies several that have the potential to make significant headway by 2030, namely: Algeria, Egypt, Indonesia, Jordan, Kazakhstan, Turkey, the UAE and Vietnam.

The problem with many of the commonly used terms such as 'tipping point' or 'proliferation cascade' is that they inevitably falter at the level of the individual state. It is simple enough to imagine strategic scenarios in which a domino effect leads to many new nuclear-armed states, but it is difficult to identify individual states that would actually follow such a course in a world increasingly characterized by economic and social integration.

Egypt is a prime example. Not only is it one of the aspiring nuclear energy states that has the potential to succeed in its

plans, but it is frequently referred to as a 'usual suspect' in the proliferation context because of its long and complicated nuclear history, including a minor reporting failure in 2004 that was eventually put down to a lack of clarity over what was required of it under its IAEA safeguards agreement. Egypt has a poor relationship with the undeclared nuclear-armed state of Israel, including violent clashes in the 1948 Arab-Israeli War, the 1967 Six-Day War and the 1973 Yom Kippur War. Despite this violence, though, Egypt never devoted resources to the serious pursuit of nuclear weapons to counter the Israeli arsenal, nor did Israel threaten to use its own against Egypt. It would be ahistorical to assume that Egypt, or indeed other Middle Eastern states, would automatically follow suit were Iran to acquire nuclear weapons. If this logic applies to Egypt it also applies to the less conflict-prone states in the Middle East and elsewhere as well.

The proliferation problem that the expansion of nuclear energy to new states poses to the non-proliferation regime is essentially unchanged from what it has always been: detecting and dealing with rare cases of NPT non-compliance as they arise. It is not about managing the rapid influx of new nuclear-capable states eager for a nuclear weapons capability. Between the unlikelihood of a significant nuclear revival, increasing recognition of the IAEA's worth and need for resources, and the genuine apathy that most states feel toward nuclear weapons, in terms of non-proliferation, nuclear energy's resurgence may not be as alarming as might initially have appeared to be the case.

Justin Alger.

Justin Alger is a researcher at the Canadian Centre for Treaty Compliance (CCTC) at Carleton University, Ottawa, Canada. He has worked on nuclear energy research for the past four years as a primary researcher on the Nuclear Energy Futures Project and as a part of his graduate studies. He holds a Master's in International Affairs from Carleton University, and an Honours Bachelor's in History from McMaster University.

New publication, July 2010



Tracking Transformative Forest Actions to Reduce Emissions: An Illegal Logging Case Study (32 pp), *WRI Working Paper*, July 2010.

Written by Florence Daviet, Lauren Goers, Andrea Johnson, Kirsten Stasio and VERTIC Senior Researcher Larry MacFaul, this paper explores the types of information and supporting data that domestic actors will need to ensure that national strategies to reduce emissions are being developed and implemented effectively. It does so by focusing on measures to address illegal logging, drawing on specific strategies and recommendations from stakeholder processes in Peru and Indonesia, to consider:

- the types of actions that countries may need to undertake;
- the types of information they will need to gather to track implementation of mitigation actions over time and how they might begin collecting this information; and
- the differential data needs for domestic and international monitoring, reporting and verification.

Based on this bottom-up information, it then provides options for how a performance-based approach in the 1992 UN Framework Convention on Climate Change and/or for upfront climate financing programs or initiatives could be developed without creating an additional burden on developing countries.



US and Russia request IAEA monitoring of plutonium disposition

In his speech to the International Atomic Energy Agency (IAEA) General Conference in Vienna earlier this September, the organization's Director General, Yukiya Amano, announced that the IAEA had recently received a joint US-Russian letter 'requesting IAEA assistance to independently verify implementation of their agreement on the disposition of plutonium no longer required for defence purposes.' The letter refers to the September 2000 Plutonium Management and Disposition Agreement (PMDA), subsequently amended in April 2010, which calls for each country to dispose of no less than 34 metric tons of excess weapons-grade plutonium. The combined 68-ton total represents, according to the US State Department, enough fissile material for nearly 17,000 nuclear weapons.

The 2000 text of the PMDA stated that the process of plutonium disposition in both countries would involve the use of light-water reactors, although Russia also enshrined the right to use its BN-600 fast-neutron reactor at Beloyarsk. However, as Elena Sokova has written for the Nuclear Threat Initiative, an advocacy group, 'implementation of the agreement was delayed, partly because of Russia's reluctance to devote significant resources to a programme that would be based on light-water reactor technology.' Among other changes, including a doubling of US financial contributions to Russia's disposition efforts (from \$200m to \$400m), the 2010 amended version of the PMDA expands Russia's right to use fast-neutron reactors in the implementation of the agreement. In addition to its BN-600, the 2010 text—designed to make the PMDA more compatible with Russia's long-term energy strategy—allows Russia to use its more advanced BN-800 fast-neutron reactor as well.

In terms of verification, the text of the PMDA (in both versions) notes that both parties 'shall have the right to conduct and the obligation to receive and facilitate monitoring and inspection activities' in order to confirm that the agreement is being followed correctly. The need to involve

the IAEA is reaffirmed in the 2010 version of the agreement, which states that: 'Each party, in cooperation with the other party, shall begin consultations with the International Atomic Energy Agency at an early date and undertake all other necessary steps to conclude appropriate agreements with the IAEA to allow it to implement verification measures with respect to each party's disposition programme.'

Specific verification arrangements, however, have yet to be finalised. The joint letter to the Agency, signed by US Secretary of State Hillary Clinton and Russian Minister for Foreign Affairs Sergey Lavrov, asks that the Agency 'engage in all necessary [verification] efforts...with the goal of preparing the necessary legally binding verification arrangements in 2011.' According to a State Department press release issued on the day of the PMDA's amendment, actual disposition is set to begin at some point before 2018, 'after the necessary facilities are completed and operating.' Given the importance of irreversibility to nuclear disarmament efforts, and the need for transparency highlighted in the Final Document of the 2010 NPT Review Conference, ensuring that the implementation of the PMDA is effectively verified will be essential to the ultimate success of the process and its wider impact on the NPT regime.

David Cliff, Vienna.

Alleged chemical weapons use by Turkey

On 12 August, *Der Spiegel* and *Die Tageszeitung* reported on allegations that Turkey had used chemical weapons against members of the Kurdistan Workers' Party (PKK). The claims were based on photographs showing bodies of eight PKK members. The photographs had been handed over to a delegation of the German Left Party by Turkish-Kurdish human rights activists. A German expert in photo forgeries confirmed the photos were authentic and the Hamburg University Hospital stated that it was highly probable that the eight members had died due to the use of chemical weapons. With this evidence at hand, German

Other new publications, July-September 2010

VERIFICATIONMATTERS

VERTIC RESEARCH PAPERS • NUMBER 9 • SEPTEMBER 2010

Verifying Warhead Dismantlement Past, present, future

David Cliff, Hassan Elbahlhmy and Andreas Persbo

VERTIC

Verified Warhead Dismantlement: Past, present, future (100 pp), *Verification Matters* No. 9, 1 September 2010. The report is the Centre's independent account of the so-called UK-Norway Initiative: a three-year project to investigate the verification of nuclear warhead dismantlement. The UK-Norway Initiative was the first time a non-nuclear-weapon state has partnered with a nuclear-weapon state to examine these issues. As such, the initiative broke important new ground, and set what may yet become a strong precedent for future work. VERTIC has been involved as an independent observer to the initiative from the project's earliest beginnings in 2007.

VERTIC's report seeks to place the UK-Norway Initiative in the wider historical context of past dismantlement exercises and studies—and in so doing draw out the commonalities and differences between those and what the UK and Norway have achieved. After a close examination of past initiatives, VERTIC has found that a number of the conclusions reached following the UK-Norway Initiative's two mock inspection visits last year mirror past findings in striking fashion.



Illegal Logging and Related Trade

Indicators of the Global Response

Sam Lawson and Larry MacFaul

July 2010

CHATHAM HOUSE

Illegal Logging and Related Trade: Indicators of the Global Response (132 pp). VERTIC Senior Researcher Larry MacFaul co-wrote this report with Chatham House Associate Fellow Sam Lawson. The report is the most thorough assessment so far of the global fight against illegal logging. According to the paper, the total global production of illegal timber has fallen by 22 per cent since 2002.

The report covers all aspects of the timber trade. It studied five producer countries, two processing countries and five consumer countries.

Speaking at the launch event, held at the Royal Society in London, Mr. Stephen O'Brien, Parliamentary Under-Secretary of State (DFID), said that deforestation still occurs at an 'alarming rate'. The solution, he argued, involves putting in place safeguards in producing countries, but also to change consumer behaviour in importing countries. He highlighted the finding of the report that 'every pound invested in combatting illegal logging results in six pounds of

THE CTBT: PROSPECTS FOR ENTRY INTO FORCE

JEFFREY LEWIS

After more than a decade of negotiation with 117 states, the CTBT has now entered a final phase of ratification. The CTBT is a landmark treaty in the history of international disarmament. It is the only disarmament treaty that has been adopted by a two-thirds majority in the UN General Assembly. The CTBT is a landmark treaty in the history of international disarmament. It is the only disarmament treaty that has been adopted by a two-thirds majority in the UN General Assembly. The CTBT is a landmark treaty in the history of international disarmament. It is the only disarmament treaty that has been adopted by a two-thirds majority in the UN General Assembly.

Interim steps
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Hard cases: India, Pakistan and North Korea
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VERTIC

The CTBT: Prospects for Entry Into Force (4 pp). This paper, on 'Prospects for Entry Into Force', is written by Jeffrey Lewis, director of the Nuclear Strategy and Non-Proliferation Initiative at the New America Foundation and founder of the highly-regarded Arms Control Wonk online blog.

The paper takes each of the nine remaining 'Annex II' hold-outs—whose ratifications are essential for the CTBT to come into force—in turn, assessing the likelihood of their full assent to the treaty in the coming months and years.

politicians made calls for an investigation of the alleged use. They were joined by parliamentarians from the Netherlands, which hosts the Organisation for the Prohibition of Chemical Weapons (OPCW), the body tasked with the implementation of the 1993 Chemical Weapons Convention (CWC).

The next day, however, the Hamburg University Hospital published an errata stating that ‘the assessment of the doctors does not support the accusation that the deaths have been caused by chemical weapons in any way. No clear statement on the cause and time of the injuries can be made.’ The Turkish authorities also denied the reports: ‘The allegations that our country might have used chemical weapons do not represent the truth in any way. Our country, which has been a state party to the CWC since 1997, does not produce, possess or use chemical weapons,’ the spokesperson of the Turkish Ministry of Foreign Affairs said. The Dutch Minister of Foreign Affairs informed the parliament that due to the errata notification he did not see any reason to investigate the matter further. The German Minister of Foreign Affairs did not taken action either.

In this case, then, the need to proceed with formal verification procedures diminished. However, in future instances where verification is required of the alleged use of chemical weapons in a country, there are several options available. The state in question could start its own investigation or invite or accept offers for a collaborative investigation from interested states, a regional organization, or a relevant international organization such as the UN Secretary General’s mechanism for examining alleged chemical (or biological) weapons use. This mechanism was recently updated so that the OPCW can now be involved in its procedures. Any state party to the CWC could also choose to initiate the Convention’s various compliance mechanisms, including the relatively innocuous ‘clarification’ and more politically-charged ‘challenge inspection’ procedures under the Article IX ‘Consultation, Cooperation and Fact-Finding’ provision. To date, however, the ‘challenge inspection’ procedure has never been used.

Yasemin Balci, London.

Russia unable to complete chemical weapons disarmament by 2012 deadline

Russia has announced that it will miss its 2012 deadline for the complete elimination of its chemical weapons stockpile, confirming what many 1993 Chemical Weapons Convention (CWC) observers had long suspected. According to the Interfax News Agency, the Russian Foreign Ministry attributes the delay to ‘financial and technical difficulties.’ These difficulties resulted from the recent worldwide economic recession. Viktor Kholstov, treaty implementation chief at the Russian Industry and Trade Ministry, said that both Russian and foreign funding had fallen, according to a statement on the website of the Kirov region’s government. An article from the Xinhua News Agency reported that Russian President Dmitry Medvedev has unilaterally declared a new completion deadline of 29 April 2015.

States possessing chemical weapons were required to destroy their entire chemical weapons stockpile by 2007. The US acknowledged in May 2006 that it would be unable to meet the 2007 deadline and, along with Russia, successfully petitioned for a one-off five year extension, which is permissible under the convention. However the US is also experiencing significant problems in completing destruction. On the US Army website, Deputy Assistant Secretary of the Army (Elimination of Chemical Weapons) Carmen Spencer noted that destruction was realistically scheduled for completion by 2021.

The issue of sanctions for failure to meet this deadline is not under serious consideration, with pressure focussing on securing continued political commitment to ensure safe and eventual destruction of remaining stockpiles. In a press release from Global Green USA, Rogelio Pfrter, former Director General of the Organisation for the Prohibition of Chemical Weapons (OPCW), remarked, ‘Given the excellent track record and firm commitment to the implementation of the convention consistently shown by the Russian Federation and by the United States of America, the key goal of achieving the total and irreversible destruction of the declared stockpiles is, in my view, not in question.’ Other CWC states parties will expect these two states

to continue to be transparent about the status of stockpile destruction, and to allocate sufficient resources to the task.

Kara Allen, London.

BWC MX discusses cooperation in cases of alleged biological weapons use

In August, states parties to the 1972 Biological Weapons Convention (BWC) attended the 2010 Meeting of Experts (MX) in Geneva. The Meeting of Experts was established by the Sixth Review Conference in 2006, as part of a four year inter-sessional process building to the Seventh Review Conference in 2011. Each annual MX is followed by a Meeting of States Parties, which reviews the proposals arising out of the MX and drafts a report.

The focus of the 2010 Meeting of Experts was the ‘Provision of assistance and coordination with relevant organizations upon request by any State Party in the case of alleged use of biological or toxin weapons, including improving national capabilities for disease surveillance, detection and diagnosis and public health systems.’ Around 450 delegates participated in the five day meeting, which lasted from 23-27 August.

The MX included plenary statements, workshops, working sessions, a poster session, an informal panel discussion, and nine side events, as well as presentations by experts. Ambassador Pedro Oyarce of Chile chaired the Conference. In his opening statement, Ambassador Oyarce remarked that the absence of a verification protocol in the BWC raises the question of how to respond to alleged uses of biological weapons. The importance of coordinating responses was a major theme and parties noted, in particular, that response actions should be coordinated across a number of different levels: global, regional, national, and local.

Another key issue addressed by the meeting related to the UN Secretary General (UNSG) mechanism for investigations of alleged use. The UNSG mechanism uses two tools: a set of guidelines for investigations, and a roster of experts and laboratories. The United Nations Office for Disarmament Affairs (UNODA) gave a presentation about develop-

ments and ‘reinvigoration’ of the mechanism. Most notably, UNODA discussed the 2007 update of the guidelines, the on-going update of the roster, and the training programs given to the roster experts by member states.

At the closing session, both a procedural report and an annex were adopted. An advance draft of these is available at www.unog.ch/bwc/meeting.

Kara Allen, Geneva.

US nominates OPCW representative

Regular readers of *Trust & Verify* may recall that the last edition highlighted the ongoing absence of a US ambassador to the Organisation for the Prohibition of Chemical Weapons (OPCW). On 9 July, however, a little over a week after *T&V129* went to press, the White House announced that President Obama was nominating Robert Mikulak for the OPCW post. Dr Mikulak has a long, and a strong, track record in the chemical weapons field, having served as director of the State Department’s Office of Chemical and Biological Weapons Threat Reduction since 1996. Prior to that, he worked for three years as deputy head of the US delegation to the Chemical Weapons Convention Preparatory Commission. He also currently serves as the US representative to the OPCW’s Executive Council.

The nomination is an important step for the Obama administration’s arms control agenda. The US cannot represent its interests fully at the OPCW without a permanent high-level diplomatic presence there—and with the destruction of its chemical weapons behind schedule, the US needs as much support and goodwill at the organisation as it can muster. At present, Dr Mikulak has to fly to The Hague from Washington to attend OPCW meetings. But as Eric Javits, the last US envoy to the OPCW has contended, the US needs a permanent representative at the chemical weapons body or it risks being accused of arrogance and of not being interested in the views of others.

David Cliff, London.

IAEA reports on Iran's nuclear activities

In its latest report on nuclear activities in Iran, released 6 September, the International Atomic Energy Agency (IAEA) records that current Iranian estimates put total low-enriched uranium production at its Natanz enrichment site up to 6 August 2010 at some 2,803kg. That represents a rise of around 15 per cent since the last IAEA report on Iran came out in May. Furthermore, said the report, 'Iran has estimated that between 9 February 2010 and 20 August 2010...22 kg of UF₆ enriched up to 20% U-235 was produced,' ostensibly destined for a medical research reactor in Tehran. Diversion to an undisclosed weapons programme—whether now or in the future—remains the principal fear, however. Once at 20 per cent purity, reaching the high percentage purity most suitable for use in a nuclear weapon is an easier undertaking. By the 20 per cent stage, most of the hard work of enrichment has already been done. And as the report makes clear, 'possible military dimensions' to the Iranian nuclear programme remain a major concern at the Agency. Iran has also now reportedly finished studies to identify locations for ten new uranium enrichment facilities and will start building one next year. In response to a request for preliminary design information on the facility, Iran stated that the required information would be communicated to the Agency 'in due time'.

Elsewhere, the report notes that the Agency has now informed Iran's representative at the IAEA that 'the repeated objection by Iran to the designation of inspectors with experience in Iran's nuclear fuel cycle hampers the inspection process' and 'detracts' from the Agency's ability to properly implement safeguards in the country. The IAEA has also reportedly requested that Iran reconsider its 2007 decision to blacklist 38 Agency inspectors and its blacklisting of four others in 2006. More recently, as the last issue of *Trust & Verify* reported more fully, Iran ruled in June that a pair of IAEA inspectors were henceforth barred from the country for filing an allegedly false report to the Agency. That ruling, strongly contested by the IAEA at the time, comes under further fire in the September report, with the Agency arguing that, while Iran's safeguards agreement gives it the right to object to the designation of specific inspectors, it 'rejects the basis upon which Iran has sought to justify its objection

in this case.' Echoing earlier statements, the Agency notes its 'full confidence in the professionalism and impartiality of the inspectors concerned, as it has in all of its inspectors.'

David Cliff, London.

European Parliament approves legislation on illegal timber

On 7 July 2010, the European Parliament agreed on the text of legislation preventing illegally logged timber from being imported and sold across the EU. Votes on the regulation, named 'Obligations of Operators who Place Timber and Timber Products on the Market', were 644-25 in favour, and it is understood that it is likely to be approved by the Council in the autumn, after which it will become binding.

The move has been welcomed by NGOs such as WWF and Greenpeace, as well as the European Commission. 'Combating illegal logging will bring environmental and development benefits,' commented European Environment Commissioner Janez Potocnik. 'With this, we are sending a signal to the world that the EU will no longer serve as a market for illegally harvested timber.' Meanwhile, Greenpeace spokeswoman Sarah Shoraka outlined the effects of the ban closer to home: 'At long last illegal timber and products made from this wood will no longer end up in UK shops,' she said.

The World Wide Fund for Nature estimates that the current pan-European trade in illegal timber is worth around \$700 million a year and that up to 20 per cent of all logs entering or passing through the EU are from illegal sources. Now, traders will be liable for prosecution for any wood products that they have acquired in violation not only of EU law, but of the laws of the country in which they were logged.

The legislation provides for a 'due diligence' system whereby importers must implement systems to minimise the risk of placing illegal timber on the market. Managing risk will include having access to information on the source, supplier, and compliance with legislation. The prevalence of

illegal harvesting will need to be considered, and except where the risk is identified as negligible, risk mitigation procedures must be carried out. The greater the level of risk identified, the more detailed the information needs to be, reaching as far as sub-regions and concessions. Certification and third-party verification schemes that verify compliance with legislation can be used by operators as part of the due diligence system. In cases where there is a significant risk of illegal logging, timber will need to be tracked to the forest of origin.

Where an importer already subscribes to a current system that provides the reasonable assurance of legality demanded in the legislation, there is no requirement to switch to a new system. And operators can use systems maintained by 'monitoring organisations' such as trade associations, in place of setting up their own.

Timber licensed under another major EU illegal logging initiative—the Forest Law Enforcement Governance and Trade Voluntary Partnership Agreements (FLEGT VPA)—will be considered as legally harvested under the due diligence regulation (VPAs are trade agreements between the EU and a timber producing country, under which the producer country sets up a legality assurance system, including verification components, and the EU commits not to allow the import of any product included in the agreement unless it is accompanied by a licence).

EU member state competent authorities are to verify that operators and monitoring organisations comply with the new regulations. The text of the legislation stipulates that member states have responsibility for setting out rules for penalties and their enforcement, rather than laying down an EU-wide sanction system, as some had hoped for.

Laurent Rathborn, London.

Verification Quotes

'The subject of nuclear arms control grew out of the seemingly paradoxical effort of those who had created the largest and most destructive arsenals to avoid by negotiation the ultimate consequences of their own decisions. The advent of nuclear weapons and other instruments of mass destruction causes strategy to be conducted at the edge of an abyss from which, should we fall into it, there may be no return. An increasing familiarity with the implications of modern weapons technology has generated a growing desire to mitigate its consequences to the greatest extent compatible with our security.' - Henry A. Kissinger delivers a powerful statement before the Senate Foreign Relations Committee, 25 May 2010.

'With its knowledge and experience, the IAEA will work to facilitate the implementation of disarmament - for example by helping to build confidence through verifying independently that nuclear materials from dismantled weapons are never again used for military purposes. The Agency played this role in 1993, when South Africa turned its back on nuclear weapons. It is ready, where called on, to play its part again.' - IAEA Director General Yukiya Amano, Statement on Anniversary of Hiroshima and Nagasaki Bombings, 6 August 2010. The IAEA might see this happen very soon as it has been invited to verify the 2000 PDMA between Russia and the US.

'The system can detect a concentration of 0.1 g of radioactive xenon evenly distributed within the Earth's atmosphere.' - Matthias Auer, CTBTO, highlights the remarkable sensitivity of the organization's noble gas monitoring system.

'In addition to a dedicated satellite to check greenhouse gas and aerosol emissions, we will have a dedicated forestry satellite in 2013 for real-time monitoring of both deforestation and afforestation across the country.' - Jairam Ramesh, Indian Union Minister for Environment and Forests, Satish Dhawan memorial lecture at the Jawaharlal Nehru Centre for Advanced Scientific Research, 29 September 2010. He highlights the need for national technical means to work alongside international verification efforts.



First CTBT noble gas detector certified

In August, the first noble gas detector in the Comprehensive Test Ban Treaty Organization's array of monitoring stations was certified ready for use. Among other roles, the organization is tasked with building and maintaining a global network of different types of sensors to detect and measure nuclear explosive tests, whether they take place underground, in the sea, or in the air. Of the 80 planned radionuclide monitoring stations, 40 are planned to be equipped with noble gas detection systems. The system is primarily geared towards detecting xenon, which is a noble gas, and will therefore not react chemically with the environment like other release products. For an underground test, the presence of radon in the atmosphere will be a strong indicator that the explosion was nuclear.

The certified detector is a SAUNA device (short for Swedish Unattended Noble Gas Analyzer) and is based in Charlottesville, US. It is part of radionuclide monitoring station RN75. Uninterrupted sampling of atmospheric xenon is performed using charcoal beds at ambient temperature. Moisture and carbon dioxide is removed from the air using thermoelectric coolers and molecular sieves. Samples are then automatically prepared using 'preparative gas chromatography' before the xenon volume is quantified using a thermal conductivity detector.

Noble gas monitoring received worldwide attention in 2006 when North Korea exploded its first nuclear device. Two weeks after the blast, radionuclide station RN16 in Yellowknife, Canada, sensed 0.3–0.6 millibecquerels of xenon-133, a level that results from only 200–400 atoms (see *Trust & Verify* No. 123). This success prompted the CTBTO to intensify its efforts to fully establish this component of its network. As of August 2010, 26 of the planned 40 stations had been set up. Some 30 stations may be set up by the end of the year, tripling the number that existed at the time of the 2006 explosion in North Korea.

Laurent Rathborn, London.

LiDAR shows increasing usefulness in forest monitoring

Measuring how much carbon is stored in the world's forests is a challenging task and, unlike measuring deforestation, which may be done using commonly available satellite measurements, can be relatively resource-intensive, especially to achieve high levels of accuracy. However, a new study from the National Academy of Sciences has raised the possibility of more widespread use of aerial and satellite data, making the task easier. LiDAR (Light Detection and Ranging) data from a survey plane was combined with satellite and ground data to build a forest map covering 11m square acres. LiDAR technology is able to measure tree height and this data can then be used to construct 3D maps of forest carbon stock. According to Greg Asner, lead author of the study, told Reuters: 'What we're showing here for the first time is an ability to not only map the carbon ... that is in the forest, but also use a technique that allows us to estimate the emissions...In terms of an international climate treaty, that's the big one.'

Ruth DeFries, from Columbia University, points out that the level of detail makes the survey 'a wonderful demonstration of the ability to monitor carbon stocks, which is required to implement policies such as REDD', reports the New York Times.

Meanwhile another LiDAR unit, this time mounted on NASA's ICESat satellite, has been used to produce the first map of global canopy heights. The process, which took seven years and covered 2.4 per cent of the earth's forests, generated vertical cross-sections of various forests. Michael Lefsky, from Colorado State University, then merged this dataset with global data from the Moderate Resolution Imaging Spectroradiometer, an instrument mounted on board two other NASA satellites. The map leads the way for more detailed survey techniques in the future, as more sensor technology is developed.

Laurent Rathborn, London.

National Implementation Measures Programme

Between July and September, the NIM Programme completed 10 legislative surveys. Staff conducted two legislative drafting workshops and made preparations for another workshop to be held in the fourth quarter; four further workshops are being discussed with other states. The team is also providing support to two states on joining the BWC and CWC. The programme is currently working on the launch of a new BWC implementing legislation database. VERTIC's Sample Act is now available in Portuguese.

Yasemin Balci joined the NIM team in July. As Programme Assistant, Yasemin provides administrative and legal research support to the team. All NIM staff travelled to Geneva in August to participate in the BWC 2010 Meeting of Experts. VERTIC staff raised awareness about the NIM Programme and delivered a statement (in Spanish) during the NGO session emphasizing the importance of BWC universality, implementation and the strengthening of the Confidence Building Measures mechanism. VERTIC was publicly acknowledged by several states for our work with them: Chile, Saudi Arabia, Philippines, Canada, and Georgia/US.

NIM staff also engaged in a number of other activities under the programme. Angela Woodward participated in the Council for Security Cooperation in Asia-Pacific (CSCAP) Study Group on Countering the Proliferation of WMD, held in Singapore 3-4 July. Angela also commented on CSCAP's draft handbook on preventing WMD proliferation in the region. On 4 August, she gave a presentation at the New Zealand Centre for Strategic Studies on the practicalities of implementing WMD treaties and UNSCR 1540 and on nuclear warhead dismantlement verification. Angela spoke about BWC implementing legislation at a Wilton Park conference on 'Prospects for the 2011 Review Conference for the BWC', held between 24-26 September.

Scott Spence participated in this year's International Law Association Conference, in The Hague. He also lectured at the Webster University, Leiden, Netherlands, and at the

Asser Institute at a WMD Course jointly sponsored with the OPCW, The Hague, which was also attended by Yasemin. Rocío Escauriaza Leal represented VERTIC at a workshop on implementing UNSCR 1540, held in Hanoi, Vietnam, from 28 September-1 October. VERTIC discussed approaches and further co-operation with participant countries on strengthening their legislation for the implementation of the BWC and Resolution 1540.

Finally, the NIM Programme also wishes to thank Kara Allen for assisting the team during her internship.

Arms Control and Disarmament Programme

The Arms Control and Disarmament (ACD) Programme was mostly preoccupied with drafting and reviewing its latest report on verified warhead dismantlement.

On 7 July 2010, Andreas Persbo participated in a Royal Society event at the AWE in Aldermaston. The meeting discussed present non-proliferation and disarmament efforts. On 16 July 2010, the ACD programme also released its penultimate briefing paper on the CTBT. Written by Jeffrey Lewis of the New America Foundation, the paper deals with prospects for entry-into-force of the treaty by looking at each of the nine remaining hold-outs in turn. Recognising the challenges that remain, Mr Lewis's paper also touches on the growing calls for alternative mechanisms for entry-into-force and for provisional application of the treaty, pending ratifications by all those required to do so.

On 22 July, Andreas Persbo, Scott Spence and Rocío Escauriaza Leal met with Professor Barry Kellman to discuss present and future work. And on 4 August 2010, Andreas Persbo travelled to Norway to participate in a small seminar on illicit nuclear fuel cycles hosted by the Norwegian Defence Research Establishment. On 11 August 2010, he met with UK Ministry of Defence officials to discuss future activities relating to verified warhead dismantlement.

On 1 September 2010, the ACD programme finally released

a 100-page report on Verifying Warhead Dismantlement, building on work undertaken by VERTIC as part of the UK-Norway Initiative over the past three years. The report is the ninth in the Verification Matters series, and has been met with a positive response from those in and around the nuclear arms control community. The report seeks to place the experience of the UK-Norway Initiative in the context of past projects investigating similar issues of verified warhead dismantlement—to see where similarities exist, where differences have arisen, and what lessons can be learned for future efforts. A peer-review meeting in London was held on 23 July 2010 and the ACD team would like to express their deep gratitude to all those who took part—some of whom crossed oceans to offer their thoughts on the report's first draft.

Between 19-25 September, Andreas Persbo, Hassan Elbahtimy and David Cliff travelled to Vienna to attend the 54th annual General Conference of the International Atomic Energy Agency. VERTIC's sizeable delegation to this year's event also included VERTIC volunteer Meena Singelee, VERTIC's recent visiting scholar Sonia Drobysz and Mark Hibbs from the Carnegie Endowment for International Peace. The conference presented the ideal opportunity to meet with Agency personnel in order to promote Verification Matters 9 and to raise awareness of VERTIC among those in the nuclear policy-making and non-governmental fields. Over the course of the week-long gathering, VERTIC met with a number of senior IAEA officials, including those from the Agency's Office of Legal Affairs, Department of Safeguards and its Office of External Relations. In addition, VERTIC staff met with a large number of member state delegations.

Also in September, Andreas Persbo travelled to Belgium to attend the preparatory workshop for the Washington Forum, and to Colombo, Sri Lanka, to participate in a workshop meeting on the verified dismantlement of short range ballistic missiles. Closer to home, Hassan Elbahtimy attended a discussion meeting in September with Gary Samore—White House Coordinator on Arms Control, WMD and Terrorism and a special advisor to President Obama—at the IISS in London.

Environment Programme

The period June to September saw the culmination of over two years of work by VERTIC's Environment Programme and Chatham House on their illegal logging indicators project. During this period, Chatham House and VERTIC developed and tested a set of indicators to monitor the response to illegal logging across the government and private sectors in selected producer, processing and consumer countries around the world. The overarching indicator areas were government policy studies (including policy assessments, enforcement and revenue data), private sector progress (including trends in certification and verification schemes, price response, diversion of trade to less sensitive markets), and levels of illegal logging (including wood balance modeling, import source analysis, trade data discrepancies). Media attention to the issue was also examined and a multi-country expert perceptions survey conducted.

The project used the indicators to track the response to the problem as it developed from its early stages into more concrete government and private sector action, before finally estimating the resulting levels of illegal logging. Conclusions were drawn on the type and adequacy of the policy response, levels of illegal logging and how they relate to one another. Estimates were also made, where illegal logging has been reduced, of savings in terms of timber, hectares, carbon, and revenue. In addition, the report set out a wide range of policy lessons for countries to learn from. Countries studied were Brazil, Cameroon, Ghana, Malaysia, China, Vietnam, France, Japan, Netherlands, UK and the US.

Chatham House and VERTIC also carried out research, analysis and contracted partner organisations in several of the focus countries to gather data there.

The main product of the project was a 132-page report written by Sam Lawson, Associate Fellow, Chatham House and VERTIC's Senior Researcher Larry MacFaul. A briefing paper and country report cards were also produced. The level of political and media attention to the project was high. The report was launched at the Royal Society on 15 July, and the event included presentations by the UK Parliamentary Under-Secretary of State for DFID, the Ambassador

of Indonesia, the Secretary General of the Centre pour l'Environnement et le Développement, and the EU Development Commissioner. There was widespread international media coverage, including features across an extensive range of the major outlets. Larry MacFaul was also interviewed by a number of newspapers and by the BBC World Service-Focus Africa.

During this period, VERTIC's environment programme also finalized a report on climate change and forests with the World Resources Institute (WRI) and the Environmental Investigation Agency (EIA). The paper, published in July, examines what kind of data countries need to gather to develop and implement REDD strategies effectively, and what information could be made available at the international level. It focuses on measures to address illegal logging in Indonesia and Peru, and draws on work carried out for the Chatham House-VERTIC illegal logging project, among others.

WRI working papers are circulated 'to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues.' The analysis and recommendations in this paper are particularly aimed at making recommendations for domestic policy makers in forest-rich developing countries and for parties to the ongoing UNFCCC negotiations, where it has already received interest. Larry MacFaul co-authored the paper along with Florence Daviet (WRI), Lauren Goers (WRI), Andrea Johnson (EIA) and Kirsten Stasio (WRI).

Larry also attended a meeting on financing climate change adaptation and mitigation in developing countries. The meeting was hosted by FIELD—the Foundation for International Environmental Law and Development—in London, on 20 September, and included presentations from several experts and commentators including Camilla Toulmin, Director, International Institute for Environment and Development; Andrew Dlugolecki, Independent Adviser to UNEP Finance Initiative; Salemul Huq, Director, International Centre for Climate Change and Development (ICCCAD), Bangladesh; and Alex MacGillivray, Director, AccountAbility.

Director's reflections

This is edition No. 130 of *Trust & Verify*. We published the first edition of the bulletin on 1 June 1989. In it, Patricia Lewis, one of the centre's first Executive Directors, wrote 'verification has become one of the key issues in arms control negotiations'. She added that 'having worked in the field of verification research for more than three years, VERTIC has come to realize that there is a need for a regular bulletin dealing solely with verification. In particular, there is a need for an up-to-date analysis of current developments in arms control and the related verification issues.' We believe that this conclusion is as valid today as it was more than 20 years ago.

Louis Henkin once famously wrote that 'almost all nations observe almost all principles of international law and almost all of their obligations almost all of the time'. This is undeniably still true. However, making international law practicable is a complex undertaking. Once a treaty has been agreed, it often needs to be *implemented* into national law. This is the focus of our NIM Programme. And of course, an undertaking will be virtually worthless if confidence in it is eroded by suspicions that the other party is not doing what it pledged to do. History has repeatedly proven the value of effective verification of compliance, and often showed how dangerous it can be when this important information stops flowing.

In 2011, VERTIC will be 25 years old. We will be celebrating this through the launch of a new website, a conference at Wilton Park, and a number of receptions in most, if not all, cities where international verification agencies work tirelessly to make this world a safer place. But above all, we will celebrate our continued assertion that verification builds trust amongst nations and confidence in international law. Without it, we are all a little bit less secure.

Andreas Persbo.

Grants and Administration

In this quarter, VERTIC received £30,000 (NOK 300,000) from the Norwegian Ministry of Foreign Affairs towards VERTIC's 25th Anniversary Conference to be held at Wilton Park next summer. The Swedish Ministry of Foreign Affairs granted the BioWeapons Prevention Project (BWPP) approximately £13,000 (SEK 150, 000) towards providing daily reports on BWC treaty meetings. VERTIC will act as fiscal sponsor for this grant on behalf of the BWPP, whose board includes Angela Woodward, NIM Programme Director.

During the VERTIC Trustees meeting held 1 September 2010, two new trustees joined the Board of Directors: Edwina Moreton, former Diplomatic Editor of The Economist and Ronald Nelson, Director of Administration, Organisation for the Prohibition of Chemical Weapons. Dr Moreton and Dr Nelson bring a wealth of experience, and VERTIC welcomes them to the Board. Sadly, this meeting also saw the resignation of Molly Anderson from the Board. VERTIC thanks her for long and valuable service to the organization. In July 2010, Yasemin Balci joined the NIM team as the new Programme Assistant. Yasemin provides administrative and legal research support to the Programme. She holds a BA from University College Utrecht and an LLM degree in public international law from the University of Cambridge. Before joining VERTIC, Yasemin worked as a policy officer at Cordaid in The Hague and was a fellow at the United States House of Representatives.

Two interns are currently working at VERTIC. Kara Allen is assisting the NIM Programme while Laurent Rathborn assists the Arms Control and Disarmament and Environment Programmes.

building trust through verification

VERTIC is an independent, not-for-profit non-governmental organization. Our mission is to support the development, implementation and effectiveness of international agreements and related regional and national initiatives. We focus on agreements and initiatives in the areas of arms control, disarmament and the environment, with particular attention to issues of monitoring, review and verification. We conduct research and analysis and provide expert advice and information to governments and other stakeholders. We also provide support through capacity building, training, legislative assistance and cooperation.

PERSONNEL Andreas Persbo, *Executive Director*; Angela Woodward, *Programme Director*; Larry MacFaul, *Senior Researcher*; Scott Spence, *Senior Legal Officer*; Hassan Elbahtimy, *Researcher*; Rocío Escauriaza Leal, *Legal Officer*; Yasemin Balci, *Programme Assistant*; David Cliff, *Research Assistant*; Unini Tobun, *Administrator*; Jasper Pandza, *Volunteer (2009-2010)*; Meena Singelee, *Volunteer (2009-2010)*; Kara Allen, *Intern (August-October 2010)* and Laurent Rathborn, *Intern (August-October 2010)*

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