

**Expert Workshop on  
“Judicial and Policy Aspects of Using Satellite Imagery”  
Tuesday, 7 May 2013  
Institute for Environmental Security, The Hague**

As a follow-up to the Expert Workshop held on 24 April 2013 in Bonn on “*Satellite Imagery: Can it Contribute to Resource Governance and Conflict Prevention?*” the Institute for Environmental Security (IES) organised a complementary Expert Workshop on the “Judicial and Policy Aspects of Using Satellite Imagery”. In particular, the workshop explored the potential use of very-high-resolution (VHR) images taken with satellites in criminal investigations and intelligence-gathering operations. Presentations were given by representatives from GAF AG, by legal experts and IES. These were followed by an in-depth discussion by the participants. This report summarises the presentations and highlights some of the key points from the discussion.

### Participants

<b>Mr. Marc Baltes</b>	Senior Advisor	IES (Vienna)
<b>Ms. Shirleen Chin</b>	Project Officer / Legal Intern	IES (The Hague)
<b>Mr. Jan Huch</b>	RS Specialist / Geologist MSc	GAF AG
<b>Mr. Gibril Jalloh</b>	Legal Intern	IES (The Hague)
<b>Mr. Ronald A. Kingham</b>	Director	IES (Brussels)
<b>Ms. Katarina Kubovicova</b>	Legal Intern	IES (The Hague)
<b>Ms. Jeannette Mullaart</b>	Programme Officer	IES (Brussels)
<b>Ms. Fieke Maas Geesteranus</b>	Information Officer	IES (The Hague)
<b>Mr. Ikaros Moushouttas</b>	Senior Advisor	IES (Brussels)
<b>Dr. Cristiano Ripoli</b>	Legal Consultant / Assistant Lawyer	Italian Parliament – Special Committee of Inquiry on Counterfeiting and e-Crime / Italian General State Attorney Office
<b>Ms. Melody Rosdahl</b>	EO / RS Specialist	IES (The Hague)
<b>Dr. Stefan Saradeth</b>	Director of International Consulting	GAF AG
<b>Mr. Tom Spencer</b>	Vice Chairman	IES (London)
<b>Mr. Wouter Veening</b>	Chairman / President	IES (The Hague)
<b>Prof. Frans von der Dunk</b>	Director / Visiting Professor	Black Holes B.V. / Univ. of Nebraska

## 1. Opening and Welcome

Mr Wouter Veening, Chairman and President of IES welcomed the participants. Due to busy schedules apologies were received from several of the The Hague-based interested institutions, such as Europol, The Hague Institute for Global Justice, Ecojust (concerned with transboundary wildlife trafficking), the Netherlands Space Office of the Dutch government and Pax Ludens (a consultancy for simulation games in the field of peace, stability and conflict with special interest in Afghanistan). All, however, expressed much interest in the subject and expressed the wish to remain informed and involved in the further process.

The agenda began with a full update on the SYMIN project by GAF. Next there were comments by the two co-referents, Prof Frans von der Dunk and Dr Cristiano Ripoli followed by Wouter Veening who shared a few questions on the use of VHR received from Ecojust. After lunch there was an open discussion on the presentations and comments of the morning and on the way forward.

## 2. Presentations by GAF: Dr Stefan Garadeth and Jan Huch<sup>1</sup>

GAF AG Director of International Consulting, Dr Stefan Saradeth and project officer Jan Huch gave their presentations on “*Out of Europe Timely Situation Awareness for Law Enforcement and Intelligence Application*”, the official title of the SYMIN project. Here, they underlined the importance of how VHR can assist in the governance of domestic raw materials exploitation – with examples of informal mining in Afghanistan plus also the official Aynak copper mine set up by a Chinese company (in a very vulnerable archaeological site).

Artisanal and Small Scale Mining (ASM) is conducted sporadically in and around remote areas in Afghanistan. ASM has a negative impact on the environment as well as on the livelihoods of the miners themselves and the surrounding communities by virtue of the impact on human health and socio-economic development. This is because around 90% of mining is informal in Afghanistan. In other words, these mining activities elude the detection of the Afghan Ministry of Mines and are subsequently not reflected in the mining cadastre.<sup>2</sup> What is equally disquieting is the possibility that profits generated from informal mining could be channelled towards Taliban insurgents or government-threatening organisations. Moreover, the potential economic loss for the Afghan government is likely to be significant, subsequently hindering the country’s general development.

By adopting the use of VHR images, earth observation data or remote sensing methods, users such as the Afghanistan Ministry of Mines, can (1) monitor and inspect technical, environmental and social compliance, (2) assist miners (or loggers) through training, and (3) prevent smuggling of raw materials. To elaborate, VHR images can detect small ASMs. With the advancements in stereo images, users can now also estimate the volume of extracted raw materials.<sup>3</sup> Of course, the use of satellite imagery is not fool proof. Dr Saradeth pointed out that problems still exist in assessing whether changes detected on multi-temporal “coherence” images could be attributable to human-induced practices or, for example, simply vegetation regrowth. The need for ground-truthing or on-the-ground-inspection is then essential in corroborating calibrated data from space. Due to the inaccessibility of the terrain and the security situation, this is not easy in Afghanistan.

In concluding, Dr Saradeth and Mr Huch stressed that satellite imagery is but a contributing element in detecting, locating, identifying and monitoring informal mining. The role of Earth Observation (EO) is by no means an end-all solution. It is merely a tool, albeit a costly one (depending on the desired

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<sup>1</sup> Maps and photographs of the various mining sites in Afghanistan used in the presentation are available on the SYMIN website at <http://www3.gaf.de/symin/>

<sup>2</sup> A cadastre is an official map or survey showing or including boundaries, property ownership lines, etc.

<sup>3</sup> Stereo images are used to create elevation models, adding a third dimension to 2D images, therefore enabling the estimation of volumes.

# SYMIN

system for monitoring law  
enforcement of informal mining



resolution), that can help monitor compliance with the rule of law – if any exist. Other monitoring tools include aerial photography from planes or UAVs (drones).

It would be desirable to have a mobile field tool where inspectors could integrate their data and communicate them directly to the central ministry for the preparation of a mines verification plan.

The SYMIN approach has also attracted the interest from Mongolia, which is in the process of developing its minerals reserves.

GAF has been involved in similar monitoring schemes, e.g. the verification of EU farmers' subsidies, environmental problems in Saudi Arabia and the implementation of international conventions.

### 3. First co-referent: Prof Frans von der Dunk

In response to the presentation by GAF, Professor Frans von der Dunk, international expert on space law, gave his views on the legal aspects of remote sensing. He emphasised the importance of the written law in ascertaining the eventual use of satellite imagery in court. Here, the basic point of departure is that “everything which is not prohibited is allowed”.<sup>4</sup> It begs the question of whether there is an existing legal regime in Afghanistan that prohibits informal mining. This leads to a definitional issue between what is known as “informal” mining and “illegal” mining. One should not confuse informal mining (legal term) with ASM (economic term) in the definitional sense even if in practice most ASM happen to be informal and the other way around; “informal” to mean “not formally regulated” or without a licence.<sup>5</sup>

Perhaps one of the most difficult issues with EO data is its admissibility in court should informal mining or the likes be found contrary to the written law. The evidence value in court of EO data is not automatic. This is because most remote sensing images need expert explanation and are often manually calibrated thus raising the question of their objectivity. Consequently, electronic data requires the discretion of the judges who first need to be comfortable with such contemporary forms of evidence, much like faxes or emails were slowly deemed admissible in the past. On the bright side, EO data has been admissible on several occasions, albeit very limitedly. A number of cases that were brought to the International Court of Justice in The Hague have made use of satellite data as ancillary “evidence” – with the help of ground-truthing before eventually being admissible.

In Professor von der Dunk's opinion, the approach for the use of EO data gathered by GAF AG on informal ASM in Afghanistan could be more appropriate from an overall policy/economic/social perspective rather than from a legal perspective.

### 4. Second co-referent: Dr Cristiano Ripoli

The second reaction to the introductions by GAF was given by Dr Cristiano Ripoli, former member of the Italian delegation to Eurojust in The Hague and presently legal consultant to the Italian Parliament and assistant lawyer with the Italian General State Attorney Office.

His presentation, entitled “*Transnational Environmental Crimes: practitioners' points of view*” took the form of a judicial analysis of environmental crimes, first in general, and then focussing on the illegal management and disposal of toxic waste, where there are parallels with the (toxic) waste and tailings produced by the mining situation in Afghanistan.

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<sup>4</sup> Reference can also be made to the legal principle *nulla poena sine lege* that means “no penalty without law”.

<sup>5</sup> Wouter Veening, referring to mining situations in other parts of the world, e.g. the Guiana Shield/Northern Amazon, remarked that for political reasons what is clearly illegal mining is often called “informal mining” as it is politically undesirable and/or practically impossible to effectively stop that mining.

He started by stressing that environmental crimes fall outside the classical criminological theories, in the sense that they predominantly transboundary and involve many actors, both legal and illegal, all with their own active interests in the chain of activities. Some of them are high career and highly specialised white collar criminals, who know exactly where and how to store, transport, dump or process the waste, where to make the false legal disposal and/or which officials to bribe.

Real time data, e.g. as provided by satellite earth observations (EO) has to be provided to the judicial authorities in the various countries which are part of the chain, in such a way that they respect the rules for the admissibility of evidence in courts and can stand up against the lawyers hired by the criminals and their law-circumventing devices.

It has to be realised that within the European Union, each member state still has its own system, waiting for the establishment of a European Prosecutor as prescribed in Article 86 of the Treaty on the Functioning of the EU.

Being aware of the involvement of other countries, authorities can start early cooperation using specialised channels such as Eurojust and Europol. This will help to bring the full dimensions and structure of the criminal organisations to the light, while at the same time exposing the limits of the existing legal frameworks.

Such cooperation will of course also help to demonstrate the usefulness of EO data, if examples can be provided where indeed they have been accepted as admissible forms of evidence in court.

## 5. VHR data to track illegal logging and wildlife trafficking

A brief last presentation was given by Mr Wouter Veening, Chairman and President of IES. He demonstrated the practical use of VHR satellite imagery in monitoring compliance with his presentation entitled *"Satellite tracking of illegal logging and trafficking of Madagascar rosewood"*. With the help of GeoEye Satellite images, Missouri Botanical Garden, an NGO active in the monitoring of the logging crisis in Madagascar, managed to track the movements (as opposed to the storage) of illegally logged Madagascar rosewood from the source to several timber depots before its shipment out to sea, pointing at the corruption of the officials involved.

He also shared questions by Ms Pauline Verheij of Ecojust on the possibilities of using VHR data for real time images of poaching in the national parks in East and Southern Africa for criminal investigation purposes, but especially for making preventative arrests. Also, if feasible, what would be the costs involved?

For example, in the famous Kruger National Park poachers from Mozambique enter the park, shoot rhinoceroses, and disappear again to Mozambique where they sell the rhino horns which then are transported by couriers to Vietnam and China.

Similarly, organised gangs are more and more active in big parks like the Serengeti in Tanzania where they poach elephants for their ivory, again to be transported to markets in China via countries such as Thailand and Malaysia.

Dr Saradeth answered that real time VHR information for these purposes is not yet available and that here local and aerial monitoring will have to do the work.

The rosewood example, like the imagery of the mining situations in Afghanistan, highlights the importance of VHR satellite imagery in assisting the environmentally-sound governance of state resources and its role in fighting clandestine activities such as corruption, siphoning off much needed financial resources from poor countries such as Madagascar and Afghanistan, which have to rely for their economies so much on the sustainable and transparent management of their natural resources.

## 6. Discussion

In the second half of the workshop, participants were invited to ask questions and comment on the presentations by GAF, Prof von der Dunk, Dr Ripoli and Mr Veening.

One of the participants asked a very important question as regards the main message to be discerned from the morning presentations. Dr Saradeth answered quite simply that in his view the ultimate aim of promoting the use of satellite imagery in the SYMIN project is to fight poverty. It does not necessarily imply the need to contribute to the criminal process of apprehending informal mining operators or illegal timber traders. Poverty can serve as a linchpin as to why satellite imagery should be used more widely. In Afghanistan, people live on meagre earnings as a result of poor governance on mining.

The Ministry of Mines, assisted by the World Bank, can benefit tremendously from the images GAF AG have produced by being able to detect irregular mining activities that are depriving the people and the country by the health risks, pollution and erosion they cause.

The second aim of using satellite imagery, according to Dr Saradeth, is to make use of and tap into its large potential in raw material governance.

Thirdly, it is to use satellite imagery as a medium to attract foreign direct investment which will motivate the need to create proper frameworks or policy. Professor von der Dunk added to this by saying that satellite imagery can contribute to the improvement of the current cadastre (so far an “empty” cadastre) in Afghanistan, which is a necessary condition for foreign investors, but may not have the power to effect change as far as regulation is concerned.

Wouter Veening pointed to the importance of an effective minerals regime for social and political stability in Afghanistan, which will become more salient after NATO forces have withdrawn from the country in 2014. An unregulated mining sector may continue to finance insurgencies on the one hand and deprive the government from the resources needed to provide the health and education services, which are essential to give it legitimacy in the eyes of the population.

Also SYMIN can have great value for ASM situations elsewhere in the world where mercury is used to extract the gold out of the ore, such as for example in the Guiana Shield/Northern Amazon.

In October 2013 the UNEP Convention on Mercury will be signed in Minamata in Japan (where as a result of decades of mercury contamination many people died or suffered from severe diseases and bodily deformations), with as basic aim to ban all uses of mercury where it may enter the environment. ASM where mercury is used is an important focus of the *Minamata Convention*, as it is being called, and precisely locating the whereabouts and size of the gold mining operations, is therefore highly important.

The SYMIN experiences will be used as well in the EU FP7 project EFFACE (European Union Action to Fight Environmental Crime) where the role of IES as member of the EFFACE consortium includes promoting the discussion of the use of remote sensing for the investigation and prosecution of environmental crime.