Dr Laurance John Donnelly
BSc (Hons), PhD, CGeol, CSci, EurGeol, FGS, FGSA
Listed as an Expert Adviser (Forensic Geologist) with the UK National Crime Agency
CHAIR, IUGS INITIATIVE ON FORENSIC GEOLOGY
FORENSIC GEOLOGY & POLICE SEARCH
MINERAL EXPLORATION & MINING GEOLOGY
ENGINEERING GEOLOGY & GEOHAZARDS
Mbl: 00 44 (0)7970 038 236
Email: geologist@hotmail.co.uk

IUGS-IFG Special Project

Forensic Geological Analysis of Crimes in International Mining, Minerals and Metals

Civilisation could not exist as we know it without the minerals upon which it relies. However, there is a global growing crime problem. According to intelligence and information obtained by IUGS-IFG this includes, but is not restricted to: (i) illegal mining beyond regulatory control, (ii) fraud, (iii) theft, (iii) adulteration of mineral concentrates or processed metals, (iv) the substitution of samples ahead of assaying, (v) the mining and trading of conflict minerals, (vi) mineral smuggling and (vii) fakery.

The scale of such criminal activity is at present poorly documented, but is suspected to take place around the world and is linked to serious and organised crime cartels, terrorist organisations and political regimes. Mining crime, directly or indirectly can affects many parts of society.

The Special Project has the following objectives:

1. Year 1 to evaluate the current global scale of mining associated crimes
2. Year 2, to assess geological methodologies which may aid law enforcement agencies in the detection, prevention, management and mitigation of mining crime and the identification of research priorities needed to develop rigorous protocols to aid law enforcement and the global minerals supply chain.

The project team includes complimentary skills including: (a) academic geologists with expertise in forensic geology, mineral deposit geology, mineralogy and geochemistry, mineral exploration and mining geology (b) operationally experienced forensic geologist consultants and experts working alongside law enforcement, (c) geologists working within the mining, minerals and metals industry and (d) serving law enforcement officers with expertise in major international crime. This unique fusion of skills is a result of the success of the IUGS-IFG.

During Q1 in Year 1, the project aims and objectives will be defined and articulated with the preparation of a project website linked to the IUGS-IFG webpages (and the IUGS website, if appropriate). Promotional materials will be prepared and distributed widely within the mining, minerals and metals industry. A project initiation meeting will be convened and held in Colombia or Brazil. Key participants will be invited to attend, with in-kind partial funding support through the project. Meeting attendance will be open to geoscientists, IUGS-IFG committee members, law enforcement agencies, NGOs etc. The meeting will allow the key goals, timescales and objectives to be articulated. Task groups will be identified, based either on individual geological commodities, or geographic regions. The membership, objectives and time-scales for task groups will be agreed. The principal aims of the task groups in Year 1 will be to determine the types, scale and extent of current mining related crime. Task groups will submit their reports to the project secretariat who will then

collate the information, which will be disseminated to; (1) the geoscience community through a paper to be submitted to Episodes; (2) to law enforcement through the preparation of a non-technical summary report and (3) to the wider community through the project website.

Following the successful completion of phase 1, in year 1, and submission of a progress report to IUGS, phase 2 of the project will involve an international meeting to be held in Southern Africa. Phase 2 of the project is to determine geological methods, techniques and strategies, which may be used to; (1) identify the type of mining related crime, such as remote sensing to locate illegal mining, (2) provide evidence of fraud, substitution and adulteration etc., for example using geochemistry or mineralogy, (3) determine the geological or geographical provenance of a mined commodity, (4) determine the key future research priorities to aid law enforcement, mining companies, minerals supply chain, governments and other NGOs to address the challenges of mining related crime and (5) provide guidance on good practise to ensure minerals are responsibly sourced and to reduce the likelihood for conflict minerals entering the supply chain. Tasks groups will be established to address specific areas. Task groups will submit their reports to the project secretariat who will then collate the information, which will be disseminated to: (1) the geoscience community through a paper to be submitted to Episodes; (2) to law enforcement through the preparation of a non-technical summary report and (3) to the wider community through the project website. It should be noted that where potential operational strategies for law enforcement are identified, they may not be made fully publically available so as not to assist the criminal activity, reducing the likelihood of them becoming forensically aware of certain methods, techniques and strategies.

This work programme arises from, and is a natural extension to, the current highly successful work programme within the IUGS Initiative on Forensic Geology. IUGS-IFG has largely focussed on; (1) the search for missing homicide victims and other buried items associated with terrorism ad serious and organised crime (2) crime scene examination and (3) geological trace evidence analysis. That work continues around the world; the project will involve some existing officers from IUGS-IFG who have established excellent international working relationships, whilst also opening up to a new community within geoscience, law enforcement and governmental agencies. The project could not be initiated within the current funding of IUGS-IFG. The proposal is hugely timely. Crimes that take place in mining, minerals and metals are highly exploitative of local communities including, very poor safety in mines and a lack of environmental responsibility. However, with increasing demands for raw materials and mineral commodities these crimes are likely to continue around the world. Illegal mining for example is an unsustainable type of mining, commonly with poor recovery and the potential sterilisation of areas of potential future mineral resources. Increasing societal transparency in terms of the supply chain of raw materials for advanced commodities is significant. EU2021 regulations for conflict minerals (tin-tantalum-tungsten) and gold (and in the future, possibly cobalt) will require the minerals and metals supply chain to be able to provenance geological commodities spatially and temporally. Increasing demand for scarce raw materials, in for example the battery supply chain, could increase the incentive for mining crime and increasing the need for regulatory challenges. Geoscientists with an understanding of mining crime, detection and mitigation will be in increasing demand. Mining crime has an enormous society impact and the geoscience community needs to respond to positively respond to the challenges raised.

Chair	Vice Chair	Treasurer	Secretary
Dr Laurance Donnelly	**Dr Rob Fitzpatrick**	**Prof Lorna Dawson, CBE**	**Ms Marianne Stam**
T: + 44 (0) 7970 038 236	T. +61-8-8303 8511	T:+44 (0) 1224 395 328	E: marianne.stam@doj.ca.gov
E: geologist@hotmail.co.uk	E: rob.fitzpatrick@csiro.au	E: Lorna.Dawson@hutton.ac.uk	