- to aid the planning of in-field and inspection activities;
- to detect changes and monitor activities at nuclear fuel cycle-related sites; and
- to identify possible undeclared activities.

The value of satellite imagery to safeguards: the case of the DPRK

Satellite imagery helps the IAEA to remain abreast of developments in the nuclear programme of the Democratic People's Republic of Korea (DPRK), even though it is unable to carry out physical verification activities there. Monitoring developments at the Yongbyon site are particularly important.

Use of satellite imagery allows the IAEA to prepare and update a detailed plan for the implementation of monitoring and verification activities in the DPRK in the event of inspectors returning to that country.

Future challenges and opportunities

In recent years, both challenges and opportunities for satellite imagery analysis have expanded dramatically. New, high spatial and spectral resolution sensors with significantly improved 'revisit times' provide unprecedented opportunities to monitor sites and activities.

In addition to optical imagery, commercial imaging radars, new infrared sensors and satellite-based video have the potential to enhance the analytical process. These capabilities provide analysts with different techniques to get additional information that support the IAEA's operational verification requirements.

"Commercial satellite imagery has become a very important information source for the IAEA's Department of Safeguards, especially regarding places where the IAEA does not have access."

— Karen Steinmaus, Head, State Infrastructure Analysis Section, IAEA

Optimizing IAEA Safeguards

By Tero Varjoranta, Deputy Director General and Head of the Safeguards Department

IAEA safeguards make a vital contribution to international security. Through safeguards, the IAEA deters the spread of nuclear weapons and provides credible assurance that States are honouring their international obligations to use nuclear material only for peaceful purposes. Its independent verification work allows the IAEA to facilitate building international confidence and strengthening collective security for all.

The field of nuclear technology does not stand still. In the past five years, 7 new safeguards agreements and 23 new additional protocols entered into force. The quantities of nuclear material under safeguards have increased by 17% and the number of nuclear facilities under safeguards by 5%. As civil nuclear programmes continue to expand, these trends are set to continue.

While the demands on the Safeguards Department – driven by our legal verification obligations – continue to grow, our budget does not increase in a proportionate way. If we are to continue strengthening our effectiveness, therefore we must become more efficient. In other words: achieve greater productivity.

There are three ways in which we are doing this. First, we are making full use of available modern technologies. Second, we are streamlining our internal processes. Third, we are encouraging States, where necessary, to improve their cooperation to implement safeguards with us.

Moreover, the nuclear agreement between Iran and major powers in July 2015 has shown the importance of the Department of Safeguards in being able to respond effectively and promptly to new verification demands from IAEA Member States.

I am positive about the future of IAEA Safeguards and their contribution to global security. We have a strong legal mandate, widespread political support and the technical capabilities to enable us to provide assurances to the world that all nuclear material is in peaceful use.

My vision for safeguards is one in which States and the nuclear industry see the IAEA as value added; in which we continue to draw independent and credible safeguards conclusions; and in which any issue of safeguards concern continues to be firmly addressed.

Tero Varjoranta, Deputy Director General and Head of the Safeguards Department
(Photo: IAEA)