Topic 4c - Recent policy case study: the REDD+ programme

Earth observation now, as a discipline, has been active for 30 years or more. And during that period, we've developed a whole range of different techniques for taking different data, visible optical data, infrared data, data from radar systems in particular, to be able to understand very many different aspects of the Earth's system, and of our planet around us, and our environment. We have developed some maturity in that understanding, which allows us now to begin to think about doing some of these activities as long-term services in a way that we can support societal benefits and societal needs.

An example, perhaps, which shows just how important this can be in terms of large scale financial commitments is the process known as REDD-- reduced emissions from deforestation and forest degradation. Now, this is a procedure which is being considered now and being implemented by the United Nations. It's a complex process, and broadly speaking, it's rich nations pay poor nations not to chop down their trees. That's the thrust of how it works. And it's a big issue.

Now, we know that forests, particularly tropical forests, are a good sink of carbon. It's a good way of taking carbon out of the atmosphere. And more importantly, in fact, its much more important we don't deforest-- we don't chop down those trees. Because that gives us an enormous release of carbon and CO2 into the atmosphere.

So we would like these countries to maintain these tropical forests as they stand at present. But of course, they represent a resource for them as well. They would like to be able to capitalise on this resource, which they have in the same that others have in the past. So in order to encourage them not to do that, the scheme REDD allows the richer nations-- Western nations-- to be able to make payments which essentially make up for the fact that the lost revenue, which the developing countries would have from cutting down the trees.

I would think that those countries who are going to be committing billions-- and it is billions, possibly even tens of billions-- of dollars a year in the future in payments to less developed countries would like to ensure that, actually, something is happening for their money, and that they're not simply paying this money and the trees are still being chopped down anyway. And to be able to monitor the extent of which deforestation is or is not taking place.

And so we've been working over the last few years with a number of different organisations to see how best we might be able to use satellite data to support that system.

Remote sensing can support policy related actions by providing better certainty on the data that are being collected. It's not exclusively Earth observation, there is also country-level data and things that are reported based on statistics and information collected on the ground. But the role of earth observation is to provide an estimate of uncertainty and additional lines of evidence to what has been collected.

So if you look at, for example, the Good Practise Guidelines for the IPCC, they have different tiers at which you can improve your compliance. So tier one would be very general information about biomass and land cover change. Tier two would be country-specific data. And then generally, tier three, which would be the best, would be involving Earth observation data.

Well, we've been working with the World Bank, with the Food and Agricultural Organisation in Rome, with the United Nations, with a number of countries-- Norway in particular, but also Australia, Japan, United States-- and with space agencies to be able to deliver a routinely a wide range of different types of data from a number of different countries-- from the US, from Japan, from Europe-- to be able to provide a continuous stream of data, which allows what are called National Forest Monitoring Systems to be developed for monitoring, reporting, and verification-- MRV-- which have to be submitted into the UN system in order to qualify for payments under REDD. This is something which is a long-term-- it needs to have a long-term supply of data. It needs to have accurate methods and substantiated methods. And with the advent of Sentinel 1 as a radar system, Sentinel 2 for optical imagery, which gives us 25, 30 years worth of data into the future, this is something in which it's worth investing both in terms of infrastructure and in terms of the methodology because you know you're going to have a data stream for long enough to make that initial investment worthwhile.

With respect to REDD-plus and the monitoring, and reporting, and verification, they need data on how much area has been deforested and how much is regrowing. And different countries have different systems for tracking that. Brazil is probably the furthest along in terms of developing their own methodology for estimating how much carbon is lost due to deforestation, or at least estimating deforested area.

They've had a programme in place since 1988 called PRODES programme, where they are estimating deforested area annually using Landsat, as well as CBERS and another Indian satellite, and DMC data-- all sort of that 30 metre, more or less, data set. And they're producing those annually. And in 2003, they made that data set publicly available so anyone can access that information.

And that's actually quite unique because a lot of countries will try and hide their true deforestation rate because there's an incentive for them to be not forthcoming, because they can manipulate the data that way. But Brazil's been very transparent with that.

As a follow-on to PRODES, they also created a programme called DETER, which produces a coarser resolution product. And that is directly used in law enforcement. So they actually go out to these areas. The problem with PRODES is you only get the data at the end of the year. So it's very hard to enforce anything as it's happening. But DETER is near real-time data that they can use to pinpoint areas that have been deforested, and visit these areas and actually find the people who are doing it and prosecute them.

You need a monitoring system that is transparent, standardised, and that people could check, if they wanted, the outcome of years of implementation of that type of policy. REDD-plus stands for the fact that, on top of trying to promote the reduction in deforestation, and deforestation, and forest degradation, you're trying to maintain, at the same time, the level of biodiversity. So there's the extra component.

So Earth observation is really relevant for the monitoring of forests. And there's more and more effort to try to explore how Earth observation could also inform the implementation of that kind of policy from the biodiverse jungle. And although there is no agreed protocol on that kind of way forward, this is something that the scientific community is exploring.