

# THE VALUE OF GOOD FORESTRY

## GEOFF SAWYER AND MARC DE VRIES CALCULATE JUST HOW VALUABLE EARTH OBSERVATION IMAGERY IS TO SWEDEN'S FORESTRY SECTOR

Forestry plays an important role in the Swedish economy. Despite holding just below 1% of the world's commercial forest area, Sweden provides 10% of the world's sawn timber. Forest covers roughly 70% of Sweden, extending over 28m ha. Of this area, almost 23m ha are productive forest land. Forest products generate an export value of €12bn and gives employment to about 90,000 people. Every year, the forestland of Sweden produces a total of around 121m cubic metres of wood. Around half of Swedish forests are owned by more than 300,000 individuals or families, the other half by the government and industry.

The current Swedish Forestry Act, which took effect in 1994, has two main goals: production and safeguarding biodiversity. The Swedish Forest Agency (SFA) is responsible for ensuring effective implementation of this policy in what has become known as 'The Swedish Forestry Model'. The result has been increasing forest and timber reserves, as well as preserved natural forest land, increasing its value for leisure and recreation pursuits. This light legislative approach is referred to as 'freedom with responsibility' – it keeps compliance costs low for the industry, and is underpinned by satellites, which can monitor the forests giving rise to the benefits which we calculate.

Before clearing an area of woodland, land owners must notify the SFA of their intention to clear-cut (or harvest) it. The SFA has six weeks to respond to the owner if there is any reason why the forest cannot be cleared. However, the owners often notify some years in advance of their intention and the SFA has no easy way to validate when or whether the forest has been cleared and if this conforms to the area notified.

Hence, information on the forests is essential for the SFA to be able to detect and control illegal activities and educate the forest owners about best management practices. Whilst forest owners can reap the benefits of their land, they have a responsibility to manage it correctly, both for their next generation but also for the Swedish State. After clearing, the land should be replanted with saplings which will grow over about 80 years (average in Sweden) before the cycle restarts and

the undergrowth should be cleared at least once in the first 10 years. Effective management, in the early years after clearing is important if the yield is to be maintained and timber stocks are to be maximised.

Since 2000, information coming from satellite imagery has allowed the detection of illegal cutting (now quite rare) and of poor management practices (lack of immediate re-planting and lack of pre-commercial thinning). Through the use of clear-cut maps (maps showing where forest has been cleared for harvest), the SFA can check whether this clearing was allowed under law and can take action where appropriate.

Most importantly, forest owners know that the SFA can monitor their land, which has improved compliance with the law. As a consequence of the availability of imagery, the area of forest cleared 'illegally' has fallen from around 10% of harvested forest each year (in 1998) to less than 0.5% (according to a 2003 study carried out internally by the SFA).

The gathering and use of the imagery and the clear-cut maps cost very little (€64k) whilst the benefits are quite large. The core benefits are related to the compliance costs savings and the long term increase in value as a result of higher timber production and enhanced quality.

On top of that, as the clear-cut maps produced by the SFA are made available as open data, other additional positive externalities accrue in the form of more social-economic value (wildlife preservation, forest diversity protection). All together we estimate that the use of imagery brings a total direct economic benefit to Sweden of between €16.1m and €21.6m per annum.

## THE USE OF IMAGERY BRINGS A TOTAL DIRECT ECONOMIC BENEFIT TO SWEDEN OF BETWEEN €16.1M AND €21.6M PER ANNUM

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