Proforest Responsible Sourcing and Production Briefings

06

Geospatial risk assessment and ‘no deforestation’ commitments

Palm oil production has been highlighted as a major driver of deforestation in the tropics, and a cause of forest fires and peatland destruction in some countries. As a result, many of the world’s biggest palm oil traders and supply chain companies have made commitments to eliminate deforestation (including deforestation on peatlands) from their supply chains.

Palm oil supply chains frequently involve tens, hundreds, or even thousands of producers, as well as mills in multiple countries. Therefore, to implement their ‘no deforestation’ commitments effectively, supply chain companies need tools to help them identify the areas in their supply base that represent the greatest risk of deforestation, peatland conversion and fire hotspots.

Geospatial risk assessment is one of these tools. It allows companies to prioritise and focus on the areas and suppliers of greatest risk and engage with these suppliers to identify ways to reduce deforestation and improve their production practices.

Palm oil production is associated with many other environmental and social risks. Researchers are actively exploring ways to use geospatial assessment for some of these risks, but currently other approaches are also needed.

Key points

- Geospatial risk assessment allows companies to identify palm oil mills that have a high risk of deforestation, fire and damage to peatland in specific areas.
- It does not currently identify risks associated with other environmental or social issues such as land and water conflicts, labour issues, child labour and biodiversity loss.
- Geospatial risk assessment is a tool with potential for use across many commodities to support a variety of approaches to responsible sourcing and production, including certification, legal compliance, direct engagement and landscape or jurisdictional initiatives.

What is geospatial risk assessment?

Geospatial risk assessment uses satellite imagery and other geographical information to identify land cover and changes to land cover. This in turn allows an estimate to be made of the risk of environmental damage occurring in that area (see Box 1). Widely used methods currently take recent trends in deforestation, peat clearance or fire in an area, and use this information to calculate the probable future risk. Experience indicates that accuracies of 70–80% are possible in Southeast Asia.

Linking this risk to the location of a mill, a group of mills or a landscape provides an effective mechanism for identifying where there is a high risk that the production practices in the supply base do not meet sourcing commitments on deforestation and peat.

As well as oil palm, geospatial risk assessment has also been used to assess risks around sugar mills. It may in future be applied to other commodities, such as soy or beef. However, its use is limited to commodities that have a geographically defined supply base around the first processing point. For commodities that can be transported a long way before first processing, such as coffee, it is more difficult to link a specific mill or processor to risks within a defined geographical area.

Box 1: Key risks covered by geospatial risk assessment

Geospatial risk assessment currently covers a specific set of environmental risks, largely related to forests. These are:

1. **Deforestation**
   The amount of deforestation over the last two years is used as a predictor of future deforestation.
2. **Deforestation on peat**
   Peat is very high in carbon. When this land is converted to oil palm plantations it releases many tonnes of greenhouse gases and can severely affect air quality.
3. **Deforestation in protected areas**
   Land clearance is generally prohibited in protected areas and forest loss indicates the occurrence of illegal activities.
4. **Fire**
   Fire is often used to clear land of forest or scrub to make way for planting.

In the future, it is likely that geospatial data will be available for other risks, including social issues such as labour rights, land tenure or child labour.

Why use geospatial risk assessment?

Geospatial risk assessment is an important tool for supply chain companies to identify mills or groups of mills that pose high risks of deforestation, fire and damage to peatland. It allows buyers of palm oil to highlight the mills that should be prioritised for closer engagement or more detailed analysis.

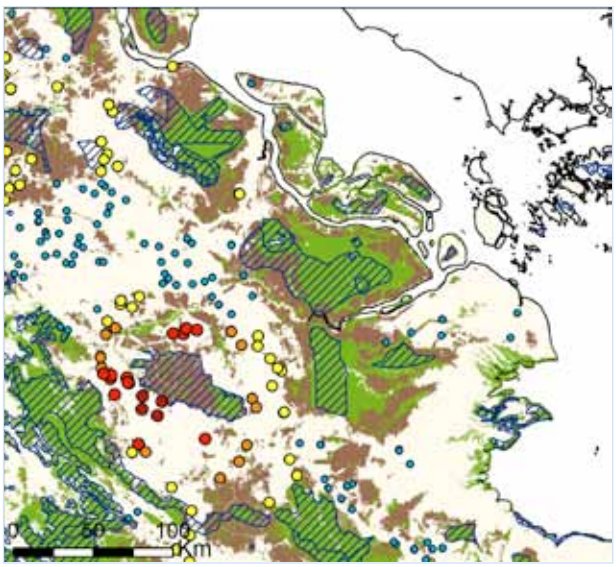
Engagement, through processes such as mill visits, supplier workshops and the development of action plans, can help suppliers to improve their practices and remain part of the responsible supply chain.

Over time, geospatial risk assessments can also be used to identify mills that are not improving, or that consistently have a high risk for one or more of the indicators assessed. These mills might be prioritised for further attention to determine whether a specific mill is actually linked to poor practice, and whether ultimately it should be excluded from a supply base.

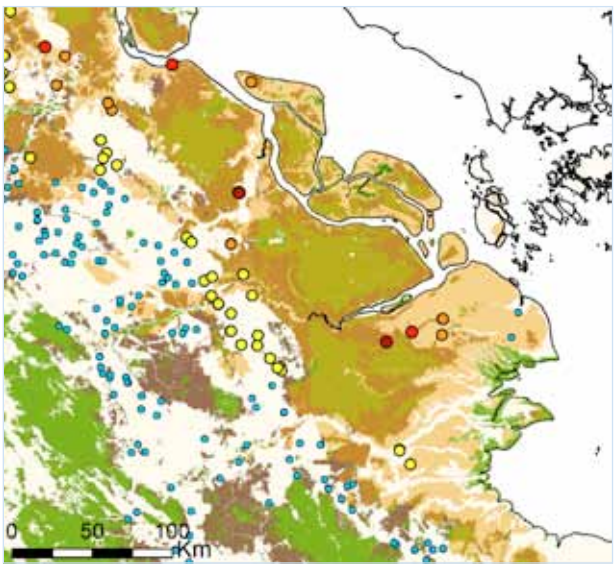
Using geospatial risk assessment

Geospatial risk analysis allows users to work at various scales. At a regional level, high risk areas can be identified for each indicator such as deforestation or fire. Figure 1 shows, for example, the clusters of mills with a high risk of deforestation in protected areas and on peat. It is noticeable that these two sets of risks do not necessarily overlap. Users need to decide which risks are more important, or are a higher priority to address.

1A. Risk of deforestation in protected areas



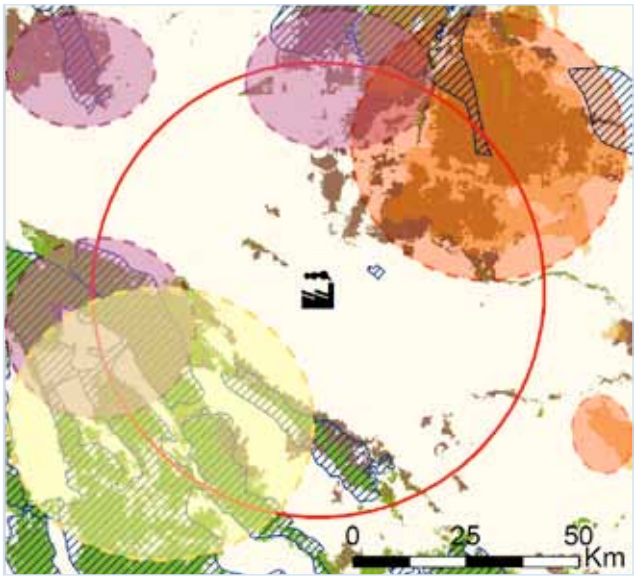
1B. Risk of deforestation on peat



Low · Medium · Medium-high · High · Extremely high · Recent forest loss · Forest cover · Agricultural land and scrub · Protected areas · Peatland

Figure 1: Differing risks of deforestation in protected areas and on peat. A) Mills close to protected areas are more likely to source from producers that are operating illegally within the protected areas. B) Mills close to significant areas of peat may be sourcing from plantations on deforested and drained peat.

At a more detailed level, the risks in the area surrounding individual mills can be assessed helping users to understand local patterns of land use and identify 'deforestation fronts'. The size of the area depends on the likely distance that materials will be transported to the mill: for palm oil this is often a 50 km radius around the mill. Figure 2 shows an example of the risk hotspots within the 50 km potential supply base of a mill. Forest areas are overlain with the areas of peat, recent deforestation history and fire. In the example this suggests that that there are high risks of environmental damage as a result of palm oil production for the mill in question. These areas would be of special interest for further field verification.



Target mill
50 km potential supply base
Agricultural land and scrub
Forest cover
Recent forest loss
Protected areas
Peatland

Risk hotspots
Fire
Recent deforestation
Peat

Figure 2: Detailed mill map, showing risk hotspots within a 25 km and 50 km radius potential supply base.

Limitations and future opportunities

Geospatial risk assessment is a relatively new methodology and several different approaches are in development. It currently has a number of limitations including:

- Geospatial risk assessment does not generally include social indicators, such as land rights, labour issues or child labour. It also does not currently cover risks related to many other environmental issues such as water conflicts, loss of biodiversity or chemical use.
- Data quality is variable. For some countries, high resolution data with a high level of certainty exists, while for others only coarse, broadly accurate data is available.
- While satellite imagery is becoming better and more widely available, the reference data that links it to what is happening on the ground is often lacking. So, for example, remote sensing cannot always distinguish between natural forest and the closed canopy of palm plantations.
- Carrying out a risk assessment requires specialised Geographical Information Systems (GIS) knowledge. This is changing, as accessible online platforms become available. Global Forest Watch's PALM (Prioritizing Areas, Landscapes and Mills) risk assessment tool is one such platform. This allows non-experts to conduct basic, automated risk assessment online, free of charge.

As well as including social and other environmental indicators, future analysis is likely to use a refined potential supply base around mills, which is better fitted to the realities of the landscape than the current 50 km radius zone. This might exclude uncultivable or inaccessible areas, and focus on land that realistically could be utilised for oil palm cultivation. It could also include information about mitigation activities that are happening within the potential supply base area.

Linking with wider approaches

Several wider approaches are being used to deliver companies' responsible sourcing and production commitments (see Briefing 01: Delivering responsible sourcing in practice: an integrated approach). These include certification, legal compliance and direct engagement with suppliers. Landscape or jurisdictional initiatives also provide promising avenues (see Breifing 02: Introduction to landscape or jurisdictional initiatives in commodity agriculture). Geospatial risk assessment offers a tool to support all these approaches. It provides an analysis of the risks of specific types of environmental damage, and can help supply chain companies decide which approach to take in different areas.

Conservation projects such as the WWF Malaysia Corridor of Life along the Kinabatangan river can also be included in geospatial risk assessments of an area.

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