

An Innovative Early Warning System To Tackle Illegal Deforestation

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SUMMARY

Forest cover loss is a persistent problem with 6,5 Mha lost annually on a global scale in the period from 2010 to 2015 (FAO, 2015). Next to the implications on biodiversity, fauna habitats, and local communities, deforestation causes 11% of the global greenhouse gas emissions of which parts can be attributed to illegal deforestation (FAO, 2018). Current forest monitoring systems using remotely sensed data, are widely available (FAO, 2020). However, to effectively action illegal deforestation these systems are often too reactive, are hampered by cloud cover, or are not inclusively developed, implemented and used by stakeholders in well-defined protocols.

Early Warning Systems (EWS) have the potential to deliver accurate and timely information on likely deforestation events in order to inform decision-making and adoption of response actions. The World Wide Fund for Nature (WWF) is developing an EWS program with the aim to predict deforestation 6 months in advance and enable national and local governments to act on illegal deforestation as early as possible in the deforestation chain. Hence, the approach is two-fold: develop technological predictive capabilities and follow a development and implementation process to ensure proper on the ground enforcement practices.

The EWS program is based on an agile approach which allows the technical and operational feasibility to be tested on a small scale before rolling out to larger landscapes. To this end, a proof of concept (PoC) and pilot were developed by WWF and partners in Central Kalimantan, Indonesia. Initial results look very promising: the technical feasibility of predicting deforestation 6 months in advance of the event was demonstrated through a machine learning model with user's accuracy of ~80% and corresponding detection rate of up to 46%. Secondly, local stakeholders have started in-field interventions leveraging a dashboard that visualizes the deforestation predictions and allows follow up of alerts. Thirdly, several governance mechanisms were set up to further improve

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intervention protocols, ensure active engagement of local stakeholders. This paper showcases EWS's innovative proposition and set up, discusses early results and provides an overview of next steps.

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