

# Mapping UNSW Impact Global Development

<b>Primary SDG</b>	<b>15: LIFE ON LAND</b>
<b>Broad theme</b>	Quantifying forest degradation and loss
<b>Research</b>	Using satellite data to map degraded forest areas
<b>Impact region</b>	Southeast Asia
<b>Faculty</b>	Science
<b>School/Institute</b>	School of Biological, Earth and Environmental Sciences
<b>Academic</b>	Dr Mark Broich
<b>Project partners</b>	World Resources Institute - \$60,000 in 'proof of concept' funding
<b>Related SDGs</b>	13: Climate Action

## Elevator pitch

Having mapped global deforestation, Mark is seeking to learn the health of forests left in Southeast Asia to determine exact areas at risk and what steps policy makers need to take to reduce further forest lost in the region.

## The Challenge: The world's forests are disappearing rapidly but by how much?

Forests around the world, and in Southeast Asia in particular where there is large scale economic development, are disappearing at alarming rates. Deforestation and forest degradation account for a significant proportion of global greenhouse gas emissions. They also lead to soil erosion, air pollution, a reduction in water quality in creeks and rivers, and dangerous climactic events like droughts and landslides. That is why the UN has a programme that funds countries who limit their deforestation and forest degradation activity but it is hard to gauge how much logging activity is occurring and where.

Thanks to Mark and Matt Hansen (University of Maryland), we know exactly how much deforestation has occurred on a global scale. For the forests left, are they in healthy shape or are they vulnerable and close to disappearing? Many degraded forests end up being razed, further reducing forest volume. Southeast Asia has lost a lot forest already. How much more can they afford to lose? How should UN funding be used to create incentives to protect the forests left and nurture new forest areas?

## UNSW's solution: Map forest degradation

For his PhD, Mark mapped the amount of deforestation in Africa, Brazil and Indonesia using time series data from satellite imagery. He is now looking to determine the amount of forest degradation in Southeast Asia using optical and radar satellite image data. How much degradation is there and where it is taking place? Mapping degradation is a more complex task than mapping deforestation - events like logging and fires have to be taken into account - but Mark is confident he can quantify the amount of degradation in the region.

## The Impact: Inform policy makers and minimise forest loss

There are many different ethnic and economic groups in Southeast Asia. Motivation among them to limit tree logging activity varies. Mark's research will help delineate these different areas. It will also shed some light on the kind of incentives policy makers might want to consider to limit logging activity.

Results from Mark's project will also inform UN and World Bank policies around deforestation and forest degradation, providing much desired evidence of where and how much tree logging activity is occurring. Players at the local level, including agricultural industries, forest managers, local communities and farmers, can also use results to manage local forest use in more sustainable ways.

### **Researcher**

Mark Broich completed his PhD in deforestation at South Dakota State University. Since then he has used satellite data to assess bushfire prospects in WA, and vegetation dynamics across Australia and around the Murray-Darling basin. He started out modelling ground water before becoming enchanted by rich satellite data that has power to impact the environment positively.

Ben Falkenmire 25.10.17