Extent & Impact of government tree plantations on livelihoods in Himachal Pradesh.

November 8, 2019 – Delhi
Sustainable Forestry in South Asia – Current Status, Science and Conservation Priorities

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Afforestation programs are growing globally

• Afforestation, reforestation, and preventing forest degradation are central to most global and national climate policies
  – REDD+ (Reducing Emissions from Deforestation and Forest Degradation)
  – FLR (Forest Landscape Restoration)
  – The Bonn Challenge

• Is it just a “conservation fad?” (Lund et al. 2017)

• There is significant research on the ecology of afforestation, but not much on the social science
  – Little published research on afforestation in India in last 30 years
Afforestation plantations in India

- These are plantations on Government-owned forest land
  - Have a goal of increasing forest cover (as opposed to private land plantations which are primarily for profit)
  - INDC proposes $6.2 billion afforestation in coming years
  - 2018 Draft Forest Policy calls for expanding plantations & expanded role for private industry in public lands plantations
- Public Forest land is essential life support for hundreds of millions of India’s poorest
  - Food, medicines, and shelter
  - Firewood
  - Grazing
  - Commercial NTFPs
  - Ecosystem services (pollination, water, climate regulation, etc.)
The Plantation Problem

• Massive spending, no evidence of impacts = waste
  – Governments & donors should demand accountability
• There are likely negative social & ecological impacts
• Large-scale planting is not cost effective for ecological restoration (see work by Chazdon, Brancalion, Holl, etc.)
• Restoration will fail without local buy-in
  – Local buy in requires local rights
Overview

1. Main question that drives our NASA-funded research is: What are the impacts of afforestation programs on rural livelihoods?
   1. In order to do this, must measure land cover change & livelihoods

2. Today’s focus is on understanding How Many & What Kind of plantations have been put in
   1. Drawing on Himachal Pradesh government data from 1979-2015

3. We are also measuring land cover change & livelihood impacts
   1. Publicly available satellite and remotely-sensed data combined with local-informant led mapping of ~500 plantation sites
   2. Interviews with 2400 households, 60 panchayats, local key informants & ethnographic observations.
Preliminary Survey results

- ~50% of households use no forest products, report no impacts from land cover changes
- Households find broad leafed plantations more desirable than needle leaf plantations for livelihoods
- Migrant pastoralists are negatively affected by plantations (see Ramprasad et al., under review)
- Local politics shifts plantations towards more livelihood support
Classification accuracy using 2dcnn deep learning approach is >85%
From: Range Forest Officer, Palampur

Subject: Annual Plantation Broucher for the Year

Memo 8:

The report on the above cited Subject is:

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Note: All figures are approximate and subject to change.
Afforestation in Himachal Pradesh has declined since the 1990s (thousands of HA/year).

Total Area planted from 1979-2015 is 845,188 HA out of a total forest area of 1,468,300 HA.
Results from records

Most funding is domestic, but domestic funding has declined while donor funding fluctuates.
Results from records

Most afforestation is not participatory
Results from records

A recent shift away from commercially oriented species favored by the state
Results from records

Declining percent are Chir Pine
(commercially important, few livelihood benefits)
Key Takeaways

1. Contrary to widespread narratives, in Himachal Pradesh, afforestation activity has declined, not risen in recent years
2. Total afforestation activity is gigantic
3. Although participatory forestry is not dominant, species choices have shifted towards species with valued community benefits
4. More detailed results about livelihoods and land cover change will be coming out in next few months
Thank you!

- Pankaj Guleria, Vikrant Thakur, Robin, Sumit Patiyal, Amit Kumar, Akshay Kumar, Keshav Kumar, Mukesh Kumar, Ajay Gupta, Neha Devi, Abha Joglekar
- NASA LCLUC SARI program & University of Minnesota CFANS
- Forest Department of Himachal Pradesh
- Janelle Schnadt and Amber Kevelin
Classification accuracy using 2dcnn deep learning approach is >85%
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Afforestation & livelihoods

- Afforestation might lead to improved supply of wood, NTFPs, and ecosystem services to rural poor.
- Afforestation might replace useful covers (e.g. agriculture or grazing land) with less useful forests.
- Afforestation might be accompanied by changes in de facto or de jure property rights in favor of govt. or commercial enterprises.
- Afforestation might lead to more or fewer jobs in the forest sector.
- Afforestation might not matter that much if livelihoods are uncoupled from local ecosystems.
India is an ideal site to study afforestation because they’ve done a lot already.

By 2005, total afforestation equivalent to 10% of India’s land area.