



グループ別発表 6
発表 3

「インド・ラダックにおける自然資本の
貢献度評価：包括的富の手法を用いて」

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Valuation of nature's contribution in Ladakh, India: an inclusive wealth method

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According to Dasgupta et al., 2015

Countries' wealth account creation and up-gradation should not be limited only to GDP data. The current measure of GDP-based wealth accounting will hinder the ability to evaluate countries' development programs.

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Breakdown of IW and NC

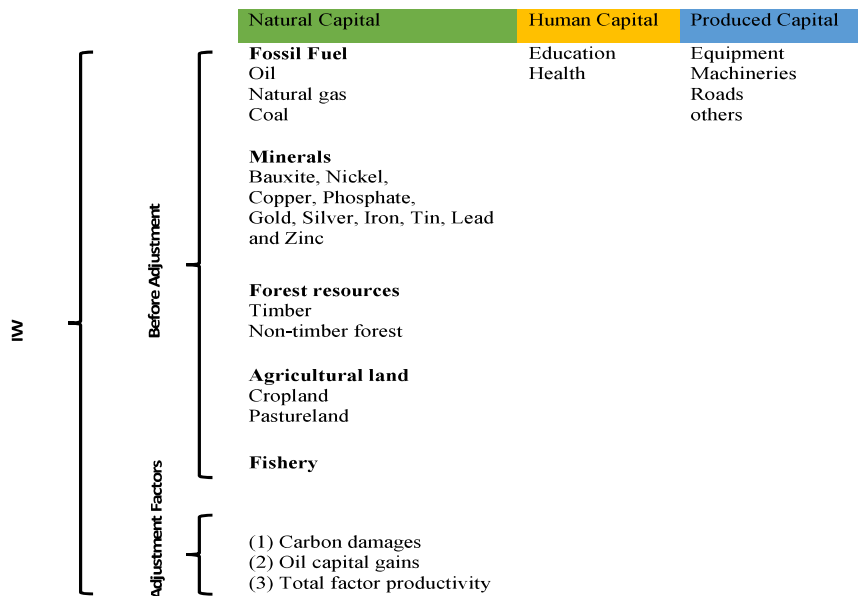


Figure 1: Schematic representation of the inclusive wealth (IW) and the natural capital (NC).

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What is natural capital and why it is important?

- Natural capital value the economy and the environment as allies for a sustainable development.
- It comprises the natural resources, including land, forest, minerals, fossil fuels etc.
- Natural resources provide enormous benefits and values, both directly and indirectly, which are essentials for supporting the economy and human well-being over time.

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Methods

- ❑ This study uses an inclusive wealth method consistently used in inclusive wealth reports (Managi and Kumar, 2018; UNU-IHDP and UNEP, 2014, 2012).
- ❑ This study upgrade the method to fit to analyze the detailed regional level data of countries.
- ❑ A hybrid model that integrates multi-discipline approaches and multi-source data to estimate IW at the 30 arc-second grid level and apply it to detect the change in NC from 1990 to 2018.

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- ❑ For the IWR we group the capital assets into three categories

- Human Capital (HC)
- Produced Capital (PC)
- Natural Capital (NC)

- ❑ The pricing of the assets is determined by the marginal contribution of each asset type to social welfare.

- ❑ This price is represented by the social (or shadow) price of the assets.

- ❑ Such price act as the weight in the metric, resulting the measure of wealth:

$$Wealth = P_{pc} \times PC + P_{hc} \times HC + P_{nc} \times NC$$

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Study Area

- ❑ Ladakh is located in the Trans-Himalaya with an altitude of 3500 m.
- ❑ The number of plant species in the region may range between 1250 and 1500.
- ❑ This area is a unique mountain ecosystem that is very important from climate, water, flora, fauna, and diverse human culture (Singh, 2006).
- ❑ The key importance of this study area is that natural resource preservation is getting priority at the regional and national levels of India.



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Grid level natural capital

- ❑ Use the GIS to refine the calculation results to the grid level. Firstly, we find the area's grid level land cover map (in 300 meters)
- ❑ GIS distinguishes the world into 37 different land types, such as cropland, herbaceous cover, tree, shrub covers.
- ❑ We calculate result different kinds of landcover of each grid.
- ❑ For instance, to calculate the wealth of agriculture and horticulture, we distribute it to land cover of cropland, rainfed and cropland, mosaic cropland.

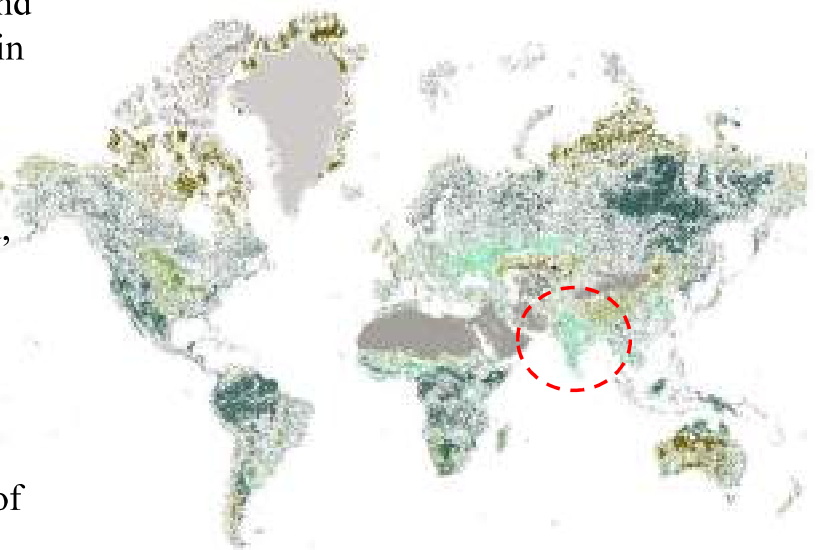
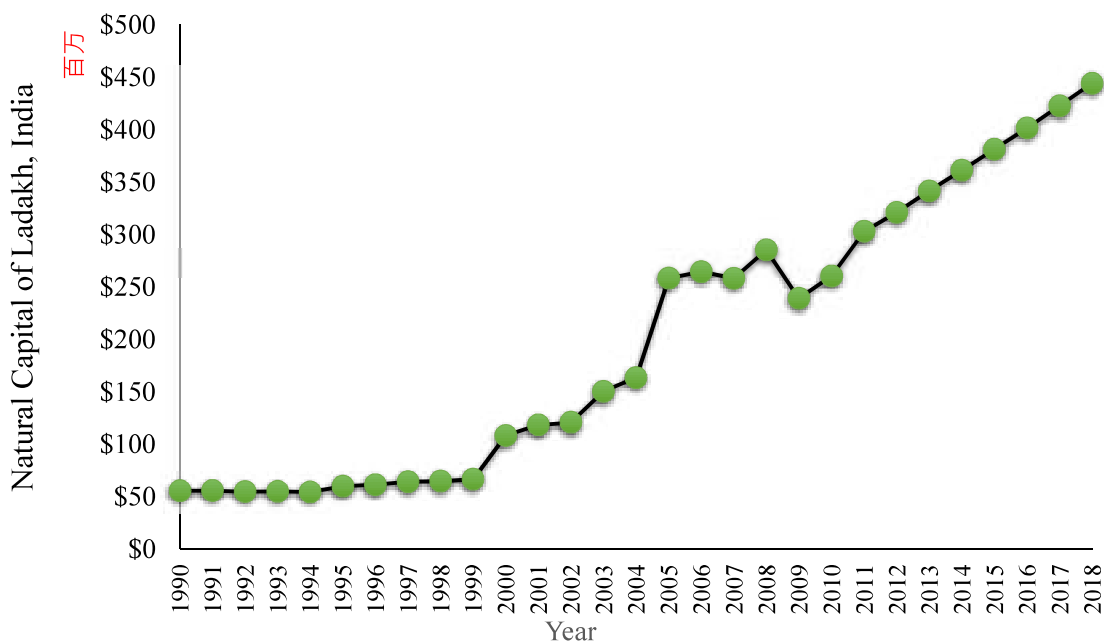


Figure: 300 m annual global land cover map in 2015 (Service layer credits: European Space Agency, CCI)

Our data shows that from 1990 to 2018, there is a rapid growth of NC in Ladakh, India.



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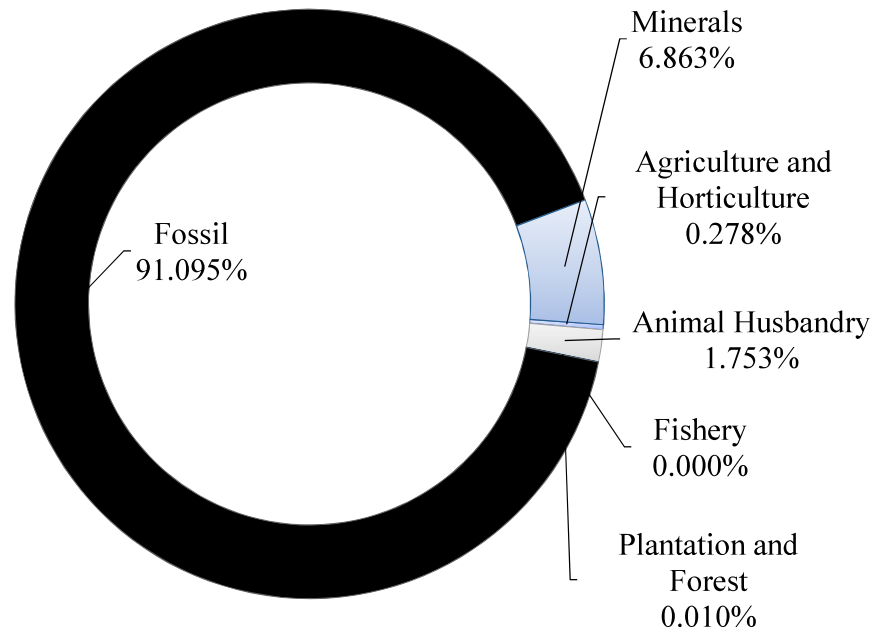
- ❑ The disaggregation of the contribution of renewable and nonrenewable resources on the total NC identifies that there are significant imbalances between these natural resources.
- ❑ The share of fossil fuels and minerals are high and following an increasing trend over the years.

Year	Agriculture and Horticulture	Animal Husbandry	Plantation and Forest	Fishery	Fossil Fuels	Minerals	Total Wealth
1990	1,605,866	147,157	222,309	2,156	35,239,804	18,611,266	55,828,558
2018	1,236,815	7,787,583	44,362	1,595	404,771,972	30,497,058	444,339,386

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Contribution of resources in natural capital of Ladakh in 2018

- ❑ In 2018, the wealth of fossil fuels captured 91.095% of all NC wealth.
- ❑ The wealth of minerals occupied the second biggest part (6.863%).
- ❑ Animal husbandry is considered important for residents' livelihood, and the share of this resource in total NC is only 1.753%.
- ❑ Agriculture and horticulture are important sources of local residents' income and contribute by 0.278% in NC of Ladakh.
- ❑ The share of fisheries resources has the most negligible share in total wealth.



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Conclusion and Policy Implications

- ❑ By utilizing this framework of this article, it is possible to calculate the NC of other regions of the world where the disaggregated data is scarce and impossible to gather.
- ❑ Since 2014, India is one of the world's fastest-growing major economy. However, India's remarkable growth record has been questioned due to the degrading environment and a growing scarcity of renewable natural resources.

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