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Earth Observation Applications, Societal Challenges and Economic Benefits (5)

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A COMBINED APPROACH TO MONITOR RAINFOREST DEFORESTATION

**Abstract**

Tropical rainforests account for a small percentage of Earth's surface yet their ecosystem has an importance that goes beyond their geographical position, indeed it is home of a huge variety of living species and provides a considerable amount of world's oxygen. Monitoring deforestation is a challenge for keeping planet Earth and humanity alive and to tackle it the approach is to fight against corruption, designing and conducting a randomized, controlled field experiment in a specific area of the rainforest, using Earth Observation data as support during the study. The percentage of missing material to the project will be used as an instrument to quantify if there were unauthorized buildings in a village closed to the construction of a new infrastructure. On the one hand the use of a satellite constellation allows to collect several Earth Observation data through frequent passes over the same spot, increasing the chance of obtaining good quality images with lower incidence of cloud coverage; this allows to take corrective actions faster. On the other hand the randomize control trial can be done at village level comparing villages audited (treatment group) and villages that are not (control group) using cross-cutting treatments; this approach disangles different mechanisms behind an effect. With this in mind, treatment arms performed will be invitation to speak at community meetings and surveys. In addition one of the objectives of the study is to identify the smallest effect size that is still cost effective. Households are involved to understand if an illicit was made, while employees of the construction site are surveyed for what concerns expenditures. These information are compared with existing and estimated expenditures. The project ends with both a retrospective cost-effectiveness analysis and an ex-post analysis to understand the most useful lessons learnt that can make the project exportable to other contexts. The abstract can be considered as a foretaste of the potentialities of the analysis and a possible starting point in order to build a sustainable economy.