

FSR Climate Annual Conference 2021 – 7th edition

Dates: 29 & 30 November on Zoom Webinar

Tuesday 30 November

14:00-16:00 – Session on Energy efficiency and renewables

Presenter: Francesco Ricci (Université de Montpellier and CEE-M)

Title: *Materials scarcity and recycling for the energy transition*

Abstract:

Renewable energy generation and storage is relatively intensive in minerals, thus the transition to a low carbon energy system relies on the use of non renewable resources. However using minerals for renewables as a means to produce energy services is qualitatively different from burning fossil resources, since the minerals embedded in the specific capital can be partially recycled at the end of life of the equipment. This asymmetry implies that, the higher the recycling rate, the larger is the share of renewables in the energy mix and the earlier is the optimal timing in building up the renewable infrastructure. Moreover, the optimal timing of recycling minerals embedded in the specific capital for renewables can be characterized in a framework with a budget constraint on cumulative carbon emissions and a costly alternative to scarce minerals for investing in the specific capital. Recycling reduces the cost of the transition and calls for having a large stock of recyclable minerals embedded in specialized capital at the time of moving to the alternative input. A myopic approach that ignores the role of minerals in the energy transition is misleading in designing climate policy.

Co-authors: Adrien Fabre, Mouez Fodha, Aude Pommeret and Katheline Schubert

Webpage and programme [here](#)