

# Accounting for Energy Return on Investment (EROI) Dynamics to Estimate Renewable Energies Potential

## Impacts on Economic Growth

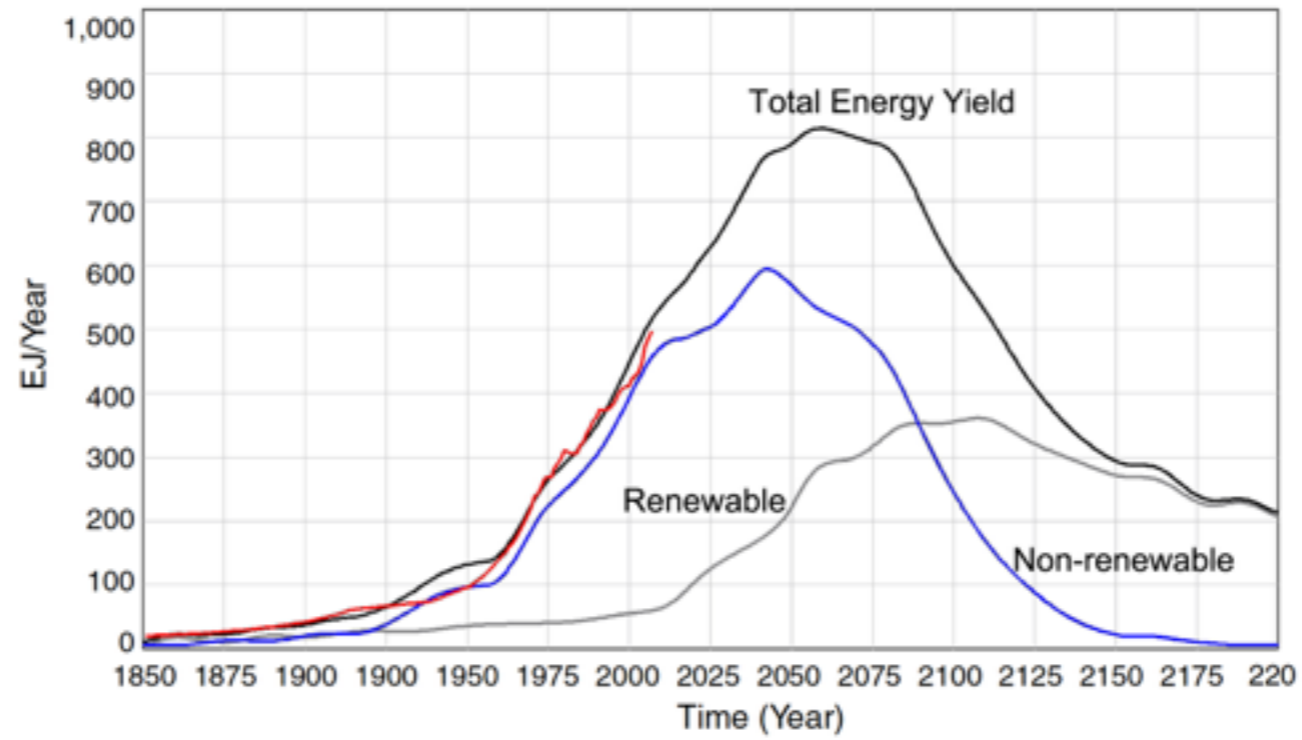
PhD Thesis of Elise Dupont  
Supervisor: Hervé Jeanmart  
Meeting LPTransition - iMMC, 23/10/18

# Net energy fuels society, not money

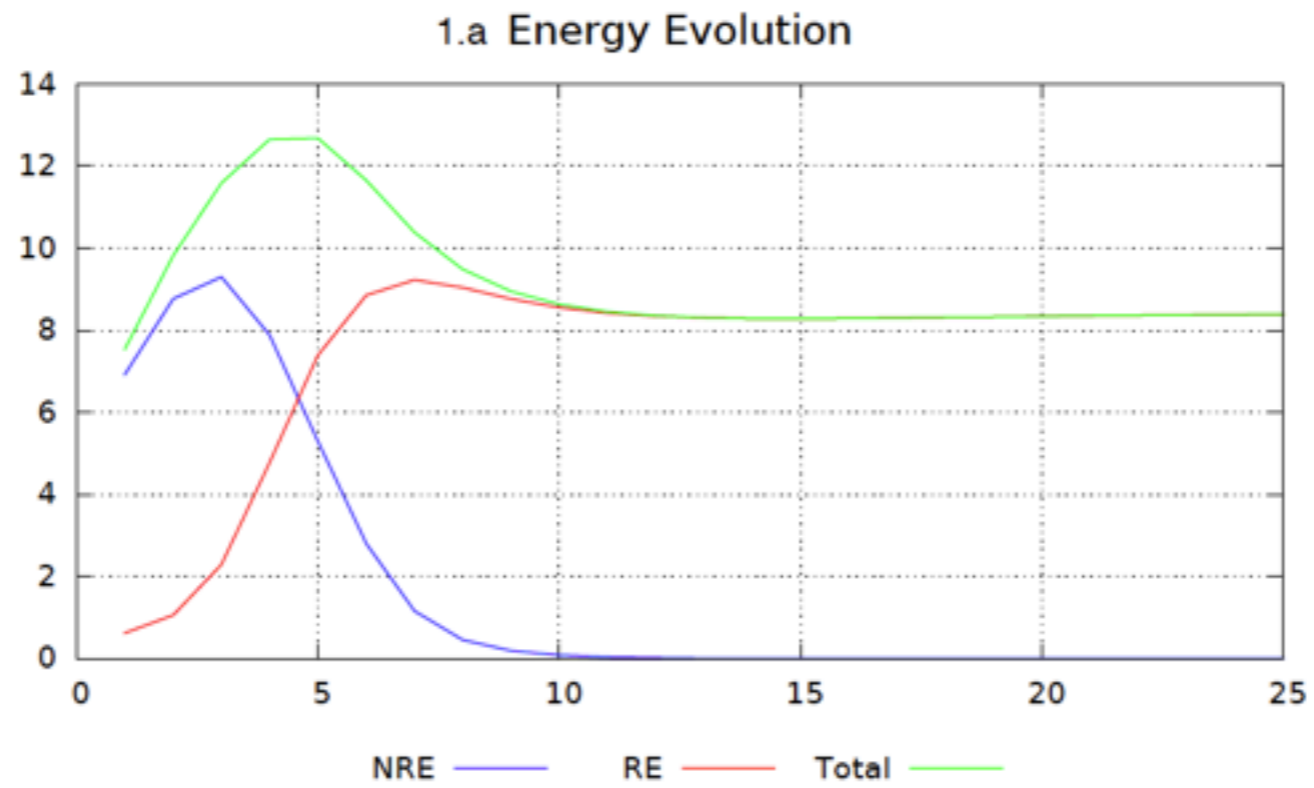
**Net Energy** = Energy Produced - Energy Invested

**Energy Return on Investment: EROI** =  $\frac{\text{Energy Produced}}{\text{Energy Invested}}$

- EROI fossil fuels ↘ with time
- EROI renewables < EROI fossil fuels
- EROI renewables ↘ with expansion



Global energy modeling - A biophysical approach (GEMBA), Dale, 2012



Can the energy transition be smooth ?, Fagnart, Germain et Peeters, 2016

Goal of my research :

Estimate the evolution of the EROI with spatial expansion for wind and solar and integrate them in an economic model

Why :

Raise awareness regarding  
the capital cost of renewable energy  
&  
the economic implications  
of a declining EROI