Analyzing drivers of renewable energy development in Southeast Asia countries with correlation and decomposition methods - DTU Orbit (10/11/2019)

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The Association of South East Asian Nations (ASEAN) is a diverse region characterized by rapid economic growth, demographic change and urbanization. The dominance of energy supply from non-renewable resources in the region means that the increasing energy demand has implications for energy security, as well as adverse local and global environmental effects. Climatic conditions in the region are favorable for renewable energy (RE) resources, especially but not only wind and solar technologies. ASEAN countries differ strongly in terms of their national policy frameworks and progress in renewable energy development; the overall target of 23% renewables by 2025 is very ambitious under current policy frameworks. This paper identifies a gap between these national policies and local governance, especially in urban areas, which requires attention to ensure future target fulfilment. By employing a new combined correlation and decomposition approach at country and city levels, we investigate the determinants of RE expansion and explore the trend drivers in ASEAN countries from 1995 to 2013. An Impact Matrix is developed to position and interpret the relative push (e.g. policy) and pull (e.g. market) impacts on RE development, and to derive policy recommendations for countries and sectors. The results highlight that urban areas should be the focus of RE policy and governance in addition to rural areas. The tremendous impact of economic growth creates a great impetus for renewable energy development, but urbanization is the second pull for renewable energy extensions. Since the two effects are located in the first quadrant of the Impact Matrix, if strategists affect these factors, they will create the most powerful incentive for renewable energy growth. This confirms that if the strategic aim is to promote renewable energy market development, through policy and governance measures, the focus should be on urban areas, non-electricity sectors and the demand side.

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