Re-vitalizing Energy Transition
in Touristic Islands

Sustainability Indexes & Evaluation of island future sustainability through ET.

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Sustainable energy transition readiness: A multicriteria assessment index

- The Environmental Performance Index (EPI) annually ranks 178 countries according to ecological performance comprising twenty-two single variables.
- The Environmental Sustainability Index (ESI) benchmarks the ability of nations to protect the environment, integrating 76 indicators of environmental sustainability for 146 countries.
- The Environmental Vulnerability Index (EVI) encompassed risks, intrinsic resilience and health or integrity of the environment, and quantified the vulnerability of the natural environment to damage from natural and anthropogenic hazards for 234 nations.
- The Ecological Footprint (EF) measured consumption of renewable resources by human activities for 52 countries

Introduction

Most of these indicators, however, were introduced long before climate change was highlighted as one of the most critical threats to global society.

Following the Paris Agreement, there emerged several studies to evaluate targets, national progress made towards them, or national capacities to sustain global temperature rise.

Climate Action Tracker indicates 33 countries' compatibility with the Paris Agreement, by rating Nationally Determined Contributions (NDCs), 2020 pledges, long-term targets and current policies;

It provides a transparent way of comparing NDCs based on the broad and diverse literature on equity in effort-sharing.

Climate Action Network Europe ranks EU countries, assessing their energy and climate ambitions, and their progress in reducing emissions and promoting renewables and energy efficiency at home, based on overall performance on climate and energy indicators,

- progress in 2020 targets, national on top of Community targets, and increased ambition. Similarly, Ecologic Institute and Climact [41] recently evaluated the EU Member States' draft National Energy and Climate Plans, through a qualitative analysis of adequacy of national targets, completeness and detail of policy descriptions, and quality and inclusiveness of drafting process;
- fourteen indicators were used in an assessment tool developed in consultation with stakeholders.
- A strict and explicit methodology is implemented to define assumptions, handle missing data, ensure quality of data sources and assign weights, before calculating the index based on arithmetic and geometric means.

Different perspectives

- There also exist recent studies and reports featuring indices on subjects relevant to, yet not explicitly on, energy transitions.
- For instance, the Energy Trilemma Index ranks the energy performance of countries, based on a weighted average;
- Ernst & Young rank countries based on their renewable energy attractiveness. Straying from a national evaluation framework
- Marinakis et al present an assessment of rural communities' needs and priorities towards sustain able development, while IEA unpacks key elements of policy packages for sustainable energy transitions
- Li and Strachan explore whether and how energy system analysis can be broadened to better encompass the socio-political dimension.
- Moreover, certain studies focus on a specific country and/or assess countries from a single perspective.

- The most recent assessment, closely associated with energy transitions, is the World Economic Forum's Energy Transitions Index (ETI), which calculates the performance of 115 countries, regarding their energy system performance and transition readiness, thereby falling well within the scope of this study.

- The ETI is based on the normalisation of various indicators across the economic (growth and development, capital and investment), environmental (sustainability), energy (access security, mix), political (commitment and regulation), institutional (governance, infrastructure, innovation) and human (capital and participation) dimensions.

- However, the impressive set of 40 variables considered, although operational, do not from a methodological point of view constitute a consistent family of evaluation criteria, in that there exist functional relations between the selected criteria, i.e. a change of one indicator cannot be ceteris paribus. As such, the family of 40 variables is not legible or minimal, which is necessary for reflecting a discussion basis that allows analysis to assess inter-criteria information and implement an aggregation procedure.

- This is, also, why the selected computational approach is an equal-weights average, instead of an elaborate MCDA method, which the authors attribute to the lack of empirical evidence on the relative importance of variables within and across the ETI dimensions for the covered countries.

Standardization

- The use of a remarkable number of standardised indicators as evaluation criteria is convenient for standardisation of a ranking but may render capacity to align input data for a broader pool of countries difficult, as also reflected in political commitment to the COP21 Paris Agreement:
- this is dependent on the NDCs of the Parties to the accord, making it difficult to assess countries represented by a supranational body and a collective pledge, like EU member states;
- while the Climate Action Tracker indicator used to reflect said commitment does not evaluate but a limited number of countries. It should finally be noted that political commitment is necessary for a transition but may reflect ambition more than readiness.

UN Sustainable Development goals

The 2005 World Summit agreed that SD should incorporate three components:

- economic development
- social development
- environmental protection

The 2012 UN Sustainable Development Agenda enacted at the Rio+20 Conference on Sustainable Development identified 17 Sustainable Development Goals with 169 targets and a deadline of 2030 for their achievement.

UN Sustainable Development goals

These UN Sustainable Development goals focus on issues such as:

- gender equality
- poverty alleviation
- environmental resource sustainability
- civic society action/participation
- social, economic, educational and environmental equity and justice approach

to measuring the progress of small island developing states (SIDS) towards sustainable development (SD) as set by the UN Sustainable Development Goals 2030.

Currently, these goals do not provide adequate guidance on how countries might measure their progress towards sustainability.

Developing an index with concrete targets, through the use of pertinent sustainability indicators

Many indexes have been proposed. These mainly involve:

- Measuring quantitatively the SD of a developing nation is a Composite Vulnerability and Resilience (VR) Index. This approach concentrates on mathematical algorithms to the success of a nation's SD policies with a heavy emphasis on economic indicators.

However, this is an approach in which composite VR indexes do not explicitly refer to sustainable development concerns. In addition this method becomes unreliable when 'soft' qualitative data are used. The incorporation into an index of certain government policies which it has implemented to aid in its SD are data we deem to be qualitatively 'soft'.

Developing an index with concrete targets, through the use of pertinent sustainability indicators

- Another type of index is called Thematic. These can be defined as individual indicators which are grouped together around a specific area or theme.
- indexes composed of a pertinent quantitative sustainability indicators that fall within the themes of social, economic, environmental and Climate Change incorporating Disaster Risk Reduction (DRR).
- With a common set of indicators, we can collect and interpret the data and compare over time and geographies.
- By using an index, one can also transparently identify how and why each specific indicator is scored and how they collectively determine a country's overall progress to a sustainable society.

Energy transition process and community engagement on geographic islands

Energy transition processes are complex, facing many challenges which extend much beyond the technical issues discussed previously.

Traditional energy transition processes commonly start by the design of an appropriate technical solution, that is then followed by meetings with the communities to inform and consult them.

In fact, most studies that centre the attentions on insular sustainable transition are so focused in producing the sufficient energy to satisfy the needs of the island as a whole that they forget the involvement of the community.

This leads to tensions between stakeholders involved in energy planning and, at times, community opposition to energy plans.

- As such, several stakeholders, working in the field of energy research and policy, agree that energy transitions must be led by transdisciplinary consortiums, guided by social science concerns around the human dimensions of energy.

- These methods are key to achieve public acceptability of green energy solutions by members of a social unit.

- The success achieved on energy transition processes throughout islands revealed how those territories are not only distinct places in which regards topography, location in global value chains, but are associated with a form of social realm centred on the community.
- As such, on the contrary of what is perceived to happen on traditional communities, the actors who promote smart energy innovation on islands emphasize how keen local actors are to learn, cooperate and engage to promote new energy technologies.

Stakeholders

- The enrolment of stakeholders, and the consecutive nurturing of the contacts, are essential aspects of the methodology.
- Relevant stakeholders have to be identified, closely related to the definition of the household function itself, and its boundaries, and to its ‘supply chain’. Not only relevant present stakeholders, but also possible future stakeholders, potential actors in future scenarios, have to be located. Of course, this is a methodological chicken-and-egg problem: stakeholders together define in a creativity workshop what the future scenarios might be, and by implication who are the relevant stakeholders in these future scenarios.

Supporting the transition process globally (domestic, business, tech).

- Electricity generation, storage and distribution

  Install a self-sufficient power supply system that uses:

  - smart grid distribution.
  - battery storage.
  - solar photovoltaic technology.

Supporting the transition process globally (domestic, business, tech).

- Transportation (Inbound-Outbound & island traffic).
    - Reduce carbon emissions from the island's transportation infrastructure by emphasising socioeconomic endeavours and solar-electric vehicles.

Supporting the transition process globally (domestic, business, tech).

- Adapting to housing and the effectiveness of public buildings
  - Reduce energy poverty by making buildings more energy-efficient and capable of producing more energy.

Supporting the transition process globally (domestic, business, tech).

- Water supply and treatment
  - Use desalination techniques to provide water for personal use and carry out water management programs.

Supporting the transition process globally (domestic, business, tech).

- Waste management and valorization
  - Utilise island sustainability as a transitional pillar to set an example of how the lifestyle of the community has changed globally.

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email

Social Media Accounts:

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