Are energy transitions an opportunity or risk to climate security?

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Panellists and short summary

This webinar took place just weeks after COP26, where the international community bolstered global commitments to mitigate the climate crisis. Much of the discussion focussed on paths to reduce emissions from the energy sector, source of almost two thirds of global greenhouse gas emissions. However little attention was given to what the repercussions for global geopolitics and security might come from a rapid transition from fossil fuels. Given the reliance of some of the most fragile and volatile states on rents and revenues from coal, gas and oil, how these states will cope economically following an energy transition is concerning. However, there is much room for optimism. The global transition to renewables may represent an opportunity rather than risk for climate security. Greener energies are more decentralised than fossil fuels, presenting opportunities for more equitable distribution of benefits, reaching vulnerable communities, as well potentially offering improvements to human health and security. Given all this, our discussion focussed on the following key questions.

- *What are the main risks when it comes to energy transitions in terms of global and local stability? How might geopolitics change because of low carbon transitions?*
- *What about politically unstable countries? How can they wane themselves off fossil fuels without contributing to more instability nationally and internationally?*
- *How can renewable energies foster stability and peace and bring sustainable development to local communities?*

For this webinar, we were joined by our distinguished panel, consisting of:

- **Jesus Quintana Garcia,** Director General, International Center for Tropical Agriculture, CIAT and Managing Director of the Americas for the Alliance Bioversity International and CIAT, CGIAR
- **Karen Smith Stegan**, Professor, Jacobs University
- **Bessma Mourad,** Operations and Planning Lead, Energy Peace Partner
- **Claudia Ringler,** Deputy Division Director, Environment and Production Technology Division, IFPRI, CGIAR

Key messages

1) **Increase cooperation on many levels and between stakeholders.** A decentralised energy system will require more cooperation to protect against patchy coverage.
2) **Strengthen the dialogue with adopters and impacted communities.** If implemented properly, renewable energy transitions could pose a huge opportunity to help increase access to energy, security, and clean drinking water.
3) **Make sure that communities benefit, and cushion potential negative impacts by providing the right governance framework.** Equitably distributing the benefits of renewables will be key to the success of energy transitions and making communities agents of stability and security.

Why this webinar?

COP26 cemented commitments from countries to do more to mitigate the climate crisis. Increasingly galvanised climate protests and serious calls from scientists formed a pre-cursor to the conference, where countries gathered to negotiate plans to limit global warming to 1.5C. One of the most polluting sectors is energy, and so was the focus of many of the discussions. Besides its importance for the global economy, energy can play a role in driving global conflicts. However, the potential repercussions of energy transitions have remained relatively under explored, both at the conference, and in public and academic discourse more generally.

The transition to lower carbon energies is likely to have multiple impacts, many of which are expected to be positive for human health and wellbeing. However, as we transition away from fossil fuels, there may be negative consequences for security. For instance, 90% of Iraq's government revenue comes from oil, which means the move towards net zero will deprive this fragile state of key revenue, unless it's able to diversify its economy away from oil. This will likely impact both Iraq's and international security.

Against this backdrop, this webinar aimed to offer a space for critical reflection on the potential impacts to security of the energy transition and ways to restrict any negative impacts and best take advantage of opportunities to build peace through this transition.

For more information about our webinar on energy transitions and climate security, click here.

Background

Renewables' potential to drive conflict

Although renewables' decentralised nature may negate the international tensions that often surround fossil fuels – as can be seen in the ongoing North Stream gas pipeline dispute between Russia and the EU – not all elements of renewables are completely decentralised. Chokepoints in supply chains may fuel tensions between nation states. Rare earths (like neodymium which is needed for magnets in electrical motors and wind turbines) are highly concentrated (Hache 2016; Smith Stegen 2015). Indeed, the IEA estimates that China and the Democratic Republic of Congo are responsible for about 60-70% of cobalt and rare earth production respectively (IEA 2021d).

Economic strain from the energy transition may also cause tensions. Many of those countries expected to lose out because of their high dependency on fossil fuel related revenues are politically unstable. The Middle East and North Africa (MENA) region is in general greatly dependent on revenues from fossil fuels especially from oil and gas, which account often for more than 40% of government resources in many of the region's countries (IRENA 2019).

Tensions may also be seen at the intra-state level, especially if renewable energy projects do not consider the desires of the communities they impact most. Conflict potential might be relatively benign but obstructive like the famous "NIMBY" (not in my back yard) attitude as is seen in many wind power developments in the EU (Botetzagias et al. 2015). However there have been cases when such objections become more serious, leading to civilian violence and rioting.

This issue could also become a problem when renewable energy sources compete for land. However, contrary to fossil fuels, which need constant drilling and mining, surfaces dedicated to renewable energy production stay roughly the same over decades. Once this factor is taken into consideration, renewable energy installations (with the likely exception of bioenergy) are less land intensive than fossil fuel energies (Trainor, McDonald, and Fargione 2016).

Clean energy as a source of stability

Renewable energies (sun, wind, water) are less geographically centralised which could make the system less prone to international conflict (Smith Stegen 2018; Vakulchuk, Overland, and Scholten 2020; Lacher and Kumetat 2011; Scholten and Bosman 2016). Each country, theoretically, has the potential to exploit its renewable energy sources and even though huge innovation challenges remain, particularly in lesser developed countries (Lema, Iizuka, and Walz 2015), renewable energies have become the cheapest energy option in many places and are expected to become even cheaper compared to fossil fuel generation in the future (Ram et al. 2018). This might reduce dependencies on other countries for energy thus providing for a more balanced global energy market (Scholten and Bosman 2016; Månsson 2015).

Moreover, there is no reason to believe that international trade in renewable technologies will decline. While there remain barriers to trade renewables (Nie 2014), modelling international trade flows for the Nordic countries, (Khan et al. 2020) finds that trade increased with increasing renewable uptake. This in turn might have positive impact on global stability as international trade generally benefits peace (Hegre, Oneal, and Russett 2010; Polachek and Seiglie 2007), although this link has been disputed by some (Barbieri and Schneider 1999).

When it comes to minerals and rare earths, the International Renewable Energy Agency (IRENA) argues that minerals and rare earth materials aren't rare at all (IRENA 2019) and the importance of them for renewable industries might be exaggerated. For instance, only 2% of wind turbines use cobalt (IRENA 2019). What is however true is that the market is highly concentrated as mining them is difficult and expensive (Smith Stegen 2018). However, while these interdependencies are not necessarily a contributing factor to global stability, the economic and geopolitical impact of rare earth and minerals mining might be less negative than is often portrayed.

On the regional and national scale, renewable energy grids are expected to become more interconnected across borders. While this might be a source of conflict, regional integration and cooperation are often thought to increase trade and prosperity (Balassa 1994; Mattli 1999) as well as strengthen security (Slocum-Bradley and Felicio 2006). Indeed, renewable energies could be seen as a facilitator or even reason to cooperate thus giving even competing parties' incentives to work together instead of against each other.[9]

Renewables are expected to lead to a more decentralised energy and electricity system, which is to a significant extent owned by citizens. In Germany, roughly 41% of all renewable capacity is owned by farmers, cooperatives and individuals (Yildiz et al. 2019). Here, concepts of "energy democracy" (Stephens 2019) and localised "(clean) energy communities" (Gui and MacGill 2018) contribute to localised sustainable development and a more democratic energy system which in turn could contribute to a more stable and equitable society.

Policy and programming for peace

The decentralised nature of renewable energy poses huge potential to cooperate and collaborate. However, to take advantage, policymakers will need to move beyond engaging in zero sum games as has been seen in the fossil fuel energy system. Karen Smith Stegen, Professor at Jacobs University, Bremen noted during our webinar that energy transitions might increase the need for regional cooperation as larger scale renewable projects are often more spread out geographically and interconnected across borders to protect against intermittent coverage. Using international fora such as the G7, the G20, or regional organisations such as ASEAN, MERCOSUR, or the African Union to steer global energy transitions might be a needed step to encourage coordination (Rüttinger et al. 2015).

Increased cooperation might be especially warranted in the fields of minerals and rare earths in order to avoid supply bottlenecks (IEA 2021d). Another area where international cooperation could be intensified is environmental standards; especially when it comes to the production rare earths and minerals. Setting global standards will make sure mining for materials needed for renewables does not repeat the same mistakes as coal or other raw materials mining.

At a more local level, talking to communities will be key to making renewable deployment a success. Jesus Quintana Garcia stressed the need to enter into a dialogue with stakeholders who are expected to adopt renewable energies and to understand their needs and preferences. This is particularly true in conflict prone contexts where stakeholder engagement and development on equal terms is preferable to top-down approaches which ignore the needs of local communities (Khaldi and Sunikka-Blank 2020; O. Johnson et al. 2016). Also, only if community needs are met, renewable energies can be a more democratic energy source, that fosters a sense of community, trust and accountability; all factors conducive to stability and peace.

Investing in education, training and skills will be important to build the capacity needed for this energy transition. This applies both for comparatively low-level competencies such as maintaining and repairing small scale mini and off-grid installations but also for medium and high-level skills such as constructing, maintaining or improving renewable energy sources. Energy transitions could help bring economic growth. Research has shown how regional innovation systems (Asheim and Gertler 2006) based on clean technology could help to revitalise former fossil fuel dependent regions, but only if local populations benefit from such innovations (Campbell and Coenen 2017; Coenen, Campbell, and Wiseman 2018).

Finance for peace

Another precondition for successful renewable implementation which allows them to contribute to stability is an adequate finance and business model. As shown above, community buy-in is of utmost importance. Some experts argue that within communities, the poorest and most vulnerable would not be able to afford the installations or the recurring costs of using them. Here, adapted business and finance models are needed, which ensure that a large number of people can benefit from their implementation for a long period of time.

Evidence for peace

More research is needed to investigate the links between renewables deployment and security and stability further to learn more about possible causalities and specific dynamics. This could be done by enriching our understanding about the link between security and renewables, via case studies, or more formally by identifying indicators which would be able to tell stakeholders about the possible relationship between energy transitions, renewables deployment, security and peace. Moreover, more research into how to avoid land-use change and negative impacts of food insecurity is needed. Claudia Ringler also noted during the webinar that a deeper understanding of what stable legal frameworks that allow for more cooperation might look like is needed.

Resources

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