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Reflection on the Need for Sustainable Development and the Role of Information and Communication Technology (ICT)

The fossil fuel industry revolution was a significant driver of economic development in the 20th century. The discovery and exploitation of large coal, oil, and natural gas reserves allowed rapid expansion of economy and living standard. However, along with this positive development, in also increase environmental consequences, from the direct impact on society and nature near the mine and pipeline to the long-term effect on global warming.

Now, we can see how global warming only needs 5 years to melt 30 meters tall of ice in Greenland. But, scientists have predicted this impact since decades ago. Despite these known concerns, industries still remain a major part of the global economy and continue to play a central role in empowering the people and economies of many countries. Therefore, it has become a significant and sensitive issue that must be addressed in transitioning to a more sustainable future.

The action we have taken so far to solve this issue is not yet sufficient enough to give time to the earth to recover itself. Because we can not directly stop using energy or push the corporate to stop, as it will be detrimental to current needs. Sustainable development refers to a process of economic and social progress that meets the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, we need to give a solution to stop the climate crisis without impacting the current and future economy.

Here plays the role of ICT in sustainable development. ICT is a catalyst for change and has the potential to bring about significant advancements in various sectors, including agriculture, energy, transportation, and even media and socio-politics.

With ICT, scientists and engineers can overcome many previous difficulties. For example, previously, renewable energy is not used en masse, as it is less predictable and dependable than fossil-fuel energy. Because it may only be available part of the time and is hard to store. However, we can make weather predictions to predict availability with machine learning. And, with electrical engineering, we can produce batteries to cover the storage issue. And we can use a smart grid to raise energy efficiency. And it is not impossible in the future, to do cross-subsidy of energy in the future. The places with abundant sun will produce solar energy and send it to nearby communities without solar energy as well, and at night they will receive energy from regions with the strong wave or wind energy.

Besides energy production, ICT has positive impacts in other sectors as well. In transportation, car-sharing providers like grab-share or bla-bla car enable people to share vehicles, which means lowering the number of vehicles on the road and raising the efficiency per car. In economics and finance, ICT can automate the calculation of carbon tax and rewards to encourage people to live more greenly. In agriculture, ICT helps socialize clean plantations, raise the efficiency of farmers, and give clear reports of pricing and regulatory policies. This socialization method is able due to the advancement of communication due to the development of networks and social media.

Socialization can be furthermore impactful if we can use it to promote the warning of global warming to encourage common people's to live greener. To encourage them to voice out the environment concern and push this urgency to be solved faster.

In conclusion, the climate crisis has been an urgent global issue for decades. However, this issue has not been properly covered due to many bottlenecks, either technical or social. But now, By harnessing the power of ICT, we are provided with a unique opportunity to get a step further in tackling sustainable development challenges and securing a better future for all.