*"How can we design the future of Earth Education for sustainable societies?"*

Focus on Energy Resources

It might be useful to bring the concept of energy to the forefront, maybe by establishing a standard introductory course, or create an entire major: B.S. in Earth Energy or something like that. The purpose would be to educate students and create specialists who will have an awareness and understanding of global energy needs and sources in a very quantitative and case-specific way. It could start with a foundation in the fundamentals of physics and energy, understanding potential, kinetic, chemical (i.e., How does a battery work?), and nuclear energy. The turning of turbines to generate electricity would also be a key topic. It would of course investigate and explore renewable and nonrenewable energy, but would also examine the practical nature of each energy source. How much does it cost to install a windmill farm and how much energy can it create? How many households would this support in various parts of the world? What about solar energy? Ocean waves or tides? How much coal is left at the rate of current global consumption? Where do politics enter the energy resource equation? What do population projections tell us about the near future consumption rates? Exactly how much does each energy source contribute to global warming? What is the global supply of energy resources such as natural gas and oil, as well as other resources such as copper or REEs? Where are we currently with attempts at energy storage? What is the global distribution of energy use by humans? Courses outcomes could focus on increasingly complex designs from students offering scenarios, solutions, or at least mitigation strategies for global energy needs. As I write this, I am imagining that this kind of educational focus already exists, perhaps in engineering. Yet it seems that my general education students do not have a handle on what energy is, how it is created, how it is used, and why we should be concerned about global energy needs.