

ARTICLE FOR STRATEGIC ENVIRONMENTAL ASSESSMENT IN THE SECTORS OF (RENEWABLE) ENERGY, BIODIVERSITY AND CLIMATE CHANGE.

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Abstract:

As soon as possible Uzbekistan will also launch SEA-strategic environmental assessment like Canada, Australia and others. What is SEA and who or which governmental body conducts the SEA in term of efficiency and why we need SEA for Uzbekistan's long term strategic plans and society prosperity. SEA is such a tool that leads to the sustainability while combining environmental dimension with socioeconomic dimensions. Also, it is long term and type of general impact assessment that takes into considerations of natural resources, ecosystem, biodiversity, renewable energy and etc.

Keywords: impact assessment, Policy, Plan, Program-PPP, SEA-Strategic environmental assessment, environmental and socioeconomic impacts, components, biodiversity, fossil fuels, renewable energy, climate change, ecosystem.

Introduction:

SEA has multiple benefits, not only for the environment and social settings but also in terms of the economy of a country or region. It is both a process and a mechanism to support the systematic integration of environmental, socioeconomic, and sustainability considerations in a policy, plan, or program (PPP). As such, it is a key process to support countries in achieving the goals of creating a green and circular

economy. Across the world, environmental impact assessment and environmental and social impact assessment are commonly required to be conducted for individual development projects. Strategic environmental assessment is a higher-level tool for assessing the environmental and socioeconomic risks and impacts of the policies, plans, and programs (PPPs) that subsequently give rise to individual development initiatives and projects. For example, PPP in the hydropower sector can promote investments in cascade hydropower schemes along a river within a river basin as well as associated infrastructure, such as transmission lines and access roads. Each of these developments will give rise to environmental and socioeconomic impacts (both positive and negative), and in combination with other developments, they will also lead to cumulative impacts on valued environmental and social components. We need to consider the bigger picture such as the impacts of multiple projects impact on to the components of nature such as groundwater and surface water resources, soil, biodiversity, atmosphere and also avoid unintended consequences; I maintain that the transition away from fossil fuels to renewable energy sources aims to reduce emissions of CO₂ and other greenhouse gases, a key drivers of climate change. But it is important that when considering all phases of the energy transition (including retiring coal-fired power plants, closing coal mines, and developing renewable energy sources), we do not overlook that these actions may also give rise to unforeseen environmental and socioeconomic consequences that can undermine human well-being, impede the achievement of sustainable development, and contribute further to breaching planetary boundaries. I propose that We should enhance plans to carefully manage these adverse consequences while at the same time maximizing the benefits and opportunities that a transition to renewable energy can bring. In terms of climate, biodiversity and energy have clear links between them. The consequences of climate change (global warming) have been clearly shown to be linked to the emissions of greenhouse gases from burning fossil fuels. The loss of biodiversity (loss of species and their habitats) is linked to the energy sector through biomass. In low-income regions, people depend overly on biomass for energy (fuelwood, peat, charcoal) meanwhile, during the energy

transition, bio-based fuels such as wood pellets or biodiesel play an important role. All are rely on biodiversity and may be drivers of ecosystem degradation due to excessive use of natural resources. Additionally, if we do not properly assess the impacts arising during a transition from fossil fuels to renewable energy. I would like to shed light on the fact that renewable energy might cause costly issues if impacts are not properly considered through the conservation of natural resources and maintaining the carrying capacity of ecosystems.

Research questions on Strategic Environmental Assessment;

How can Strategic Environmental Assessment improve sustainable development in the renewable energy sector through conserving or protecting biodiversity and mitigating the impacts of the climate change? This includes how renewable energy projects affect biodiversity and natural habitats of species, and also how SEA identifies and reduces the risk of biodiversity loss, mitigation strategies for protecting ecosystems, SEA contributes to climate change mitigation and adaptation strategies, and it reduces greenhouse gas emissions, improve the resilience of ecosystems against climate change through large-scale PPPs, minimizing the effects of renewable energy development, support sustainable energy deployment.

Literature review of project proposal;

Strategic Environmental Assessment is an integrated tool that adds environmental and social considerations into policies, programs and plans to support economic development in terms of providing sustainable development. It ensures economic growth, a high quality of life while protecting the nature. SEA also is to help decision makers to accept long-term, effective, forward-looking decisions while promoting biodiversity, improving the ecosystem capacity, advocating the transition from fossil fuels to the renewable energy. Many studies have shown that renewable energy projects such as wind farms, solar parks, and hydropower plants can have both positive and negative environmental impacts. On the positive side, they contribute to reducing greenhouse gas emissions and mitigating climate change. However, risks are maintain such as habitat destruction, land-use changes, and negative impacts on

biodiversity. For example, wind energy projects may affect bird and bat populations, while hydropower developments can disrupt aquatic ecosystems. In term of biodiversity, research focuses on that SEA plays a crucial role in identifying environmentally sensitive areas and ensuring that development projects avoid or minimize damage to ecosystems. I argue that incorporating biodiversity considerations at the strategic planning stage is more effective than addressing them at the project level. SEA enables early identification of risks and supports the development of mitigation strategies, such as site selection and environmental protection measures. With regard to climate change, literature shows that SEA contributes to both mitigation and adaptation efforts. It helps integrate climate considerations into energy planning by promoting low-carbon technologies and improving resilience to climate-related risks. From the side of sustainable development or impact assessment, SEA enhances policy coherence by aligning environmental, economic, and social objectives. Despite its benefits, many studies point out challenges in SEA implementation, particularly in developing countries. These challenges include limited institutional capacity, lack of technical expertise, insufficient data, and weak regulatory frameworks. As a result, the effectiveness of SEA is often constrained.

Research methodology (quantitative); These data are obtained from the official IAIA website, and are also used to analyze indicators such as emission factors, land-use changes, and biodiversity indices. <https://iaia.org/>.

Expected results and benefits if the Strategic Environmental Assessment is implied;

Overall, it helps identify impacts at an early stage through research, using impact matrices, and workshops, particularly through cumulative impact assessment that assess the combined effects of multiple projects on the same ecosystem components such as soil, water, air, biodiversity and natural resources. Furthermore, decision makers can make better decisions resulting in getting improved environmental conditions following comprehensive assessments while minimizing negative impacts on the natural habitats. Moreover, we calculate emission factors through analyzing

every project with cumulative impact assessment which is one of the greatest advantages of SEA.

Conclusion: Advantages of the Proposed Project; In conclusion, this project proposal shows the importance of implementing Strategic Environmental Assessment in the renewable energy sector, with an emphasis on biodiversity conservation and climate change mitigation practices. As renewable energy development continues to expand globally, it is essential to ensure that such progress remains environmentally sustainable. SEA provides a structured and preventive approach that supports long-term ecological balance while guiding policy and planning decisions. The key contribution of this project proposal is to support the achievement of recovering nature, sustainable development and its goals through biodiversity conservation, making a proper transition from fossil fuels to renewable energy and mitigating climate change consequences.

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