

# Implementation of sustainable development principles assignment



**ASSIGN  
BUSTER**

Environmental and social impact analysis of the infrastructure which is going to be constructed must be objectively prepared and away from the economic worries. Nevertheless, governments have inadequate skills for managing the sustainable development process In the Infrastructure Investments. In addition to this, especially governments of developing countries have challenges In funding large-scale infrastructure projects. As a result of these facts, ' build - own - operate - transfer' (BOOT) system has arisen as an option to fulfill the demand of governments.

BOOT system not only funds an infrastructure investment with a more sustainable approach, but also offers new business areas for the construction industry. This mutual relationship between governments and construction industry can be sustained as long as the risk assessment of the projects Is done accurately. Introduction 2. 1 Hydrophone stations which are acknowledged as environment friendly energy source has started to be examined also in other aspects by the business world, since the incept of the sustainable development have arisen in the last few decades.

Besides environmental perspective, economic and social impact of hydrophone stations and their social facilities also should be assessed in order to provide the sustainable development. Hydrophone stations produce green energy which is environmentally sustainable. Nevertheless, the construction of hydrophone stations has considerable impacts on the environment. Design stage plays a crucial role for minimizing the effects on the environment. Hydrophone stations may also influence the existing natural habitat during the reservoir creation.

In the economic aspect, hydrophone stations have mostly giant project budgets with their additional infrastructure. Therefore, they usually provide economic development in the regions where they are built. Additional economic benefits can be provided by selling the unused produced electricity. Hydrophone stations can maintain the social sustainability in parallel with the local economic development. Construction and operation stages create new employment opportunities for the society.

Social facilities which are going to be built near power station can be improved by establishing hydrophone institutes. . 2 Information and analysis

2. 2. 1 Environmental aspect of sustainable development The success of a construction project depends on its ability to be adapted to the natural environment. Therefore, the main objective of construction projects must be minimizing their impact on the environment. Although hydrophone is a renewable energy source, which has minimal pollution impact, hydrophone station projects have significant effects on the nature.

As it is stated by International Hydrophone Association (2014); impacts that may arise at the construction phase and need to be leaned for can include but are not limited to: ; Drainage problems; ; Erosion and sediment liberation due to earthmoving, clearing, quarrying and road- making; ; Long-term scars on the landscape due to vegetation and earth removal or disturbance; ; Chemical, fuel and oil spills; ; Waste management issues; ; Long-term site contamination risks; ; Introduced species; ; Disturbance of animal and plant communities.

These items should be accurately evaluated and construction impact minimization plans must be prepared and applied in order to prevent from potential environmental risks during the construction stage. Sartor Shah (2012), World Bank Regional Director for Central Asia also mentioned that a Techno-Economic Assessment Study (TEAS) and an Environmental and Social Impact Assessment (ASIA) are being conducted by international consultant firms contracted on a competitive assistance of World Bank experts. Among these construction impacts, the loss of rare and threatened species may in some cases be a significant issue.

According to International Hydrophone Association (2014), this can be caused by the loss or changes to habitat during construction disturbance, or from reservoir creation, altered downstream flow patterns, or the mixing of aquatic faunas in inter-basin water transfers. International Hydrophone Association (2014) also offers that Scheme sitting and design can ensure minimization of the environmental footprint and avoidance of areas with very high biodiversity values may be able to be avoided. However, sitting and design is a crucial issue because it may cause significant impacts on the environment if it is primarily managed by economic concerns.

At the operational stage, management of flow releases can be utilized to preserve important aquatic ecosystem functions that will protect biodiversity. As with all management measures, monitoring and adaptive management are essential. Besides the environmental impact of hydroelectric power station, km of four-lane carriageway also causes additional impact. First of all, the consumption of road building materials such as asphalt or concrete has considerable effects on the environment in <https://assignbuster.com/implementation-of-sustainable-development-principles-assignment/>

the construction stage. Moreover, highways have also significant ecological impact during their service periods.

As it is stated in the work assignment of the U. S. Environmental Protection Agency (1994); highway development can be said to affect ecosystems, and their values and functions, through the following stress processes: ; Alteration of topography; ; Vegetation removal; ; Erosion, sedimentation, and soil compaction; ; Dehydration and inundation; ; Acidification, colonization, and warming; ; Contaminant toxicity; ; Noise and visual disturbance; ; Introduction of exotic species; ; Direct mortality from road kills.

Furthermore, carbon emissions which will be caused from vehicles, also affect the environmental sustainability. So, in order to reduce the environmental impact of carriageways, the transportation project might be switched to two lanes of Ridgeway plus two lanes of electric railway which is powered by the hydroelectric plant. Electric railway is also the most energy efficient transportation option which also offers high speed.

## 2. 2. Economic aspect of sustainable development

As a part of a regional strategy and with sound legal and institutional arrangements, hydrophone projects can be considered as a tool for economic development, due to its longevity, favorable energy payback periods, their pivotal role in integrated energy systems, and their multi-purpose character. (Sustainable Hydro Power undated) However, hydroelectric power station projects' cost and financial projections should be evaluated accurately in order to make use of their economic benefits.

First of all, not only costs for land acquisition should be determined by comparing the arbitrary with considering the environmental and social sustainability concerns. According to The World Commission on Dams found that on average, large dams have been at best only marginally economically viable. The average cost overrun of dams is 56%. This means that when a dam is predicted to cost \$1 billion, it ends up costing \$1.56 billion. In too many cases, the burden of uneconomic dams is shouldered by a nation's citizens, while the project builders walk away with a tidy profit and another project to add to their portfolio. Cited in International Rivers, undated)

Accurate cost evaluation provides an equal profit sharing plan. Economic benefits of power station should be shared with the local community in order to obtain economic sustainability. The construction of the hydrophone station also requires a considerable local labor force, which brings economic opportunity for the community. Moreover, long-term operational period provides sustainable employment opportunity.

International Hydrophone Association (2014) also confirms that the longevity of the benefits of hydrophone schemes lies in the usually long-lasting nature of dams and the ability to extend the operational life of power stations through refurbishment and upgrade. It is not uncommon that refurbishment and upgrade after 30-40 years will extend the operational life of a hydrophone scheme to more than 80 years. The retail park and apartment project presents a long-term economic development for the local society by providing new job opportunities in facilities.

In another perspective, Atkinson suffers from chronic electricity shortages; the World Bank says 70% of Tasks often face "excessive shortages" in the <https://assignbuster.com/implementation-of-sustainable-development-principles-assignment/>

winter. The completion of power station would make Atkinson energy independent, meaning that it would no longer face severe shortages whenever its neighbor and rival, Uzbekistan, decided to block gas imports. Beyond that, it would also provide massive amounts of electricity to Afghanistan and Pakistan. (Landfill 2013) Consequently, while the decrease in gas imports provides savings in the national budget, the export of the electricity generates additional income.

### 2.3 Social aspect of sustainable development

Hydrophone developments can maintain the social sustainability as long as the integration of the society is implemented in the constructional, operational and managerial systems of the project. The development of electricity systems, infrastructure including highways and Retail Park will generate a sustainable social environment within the region already. Nevertheless, as we mentioned before, a Social Impact Assessment is required in order to monitor the expected outcomes in the social aspect. The lifestyle of the existing local communities might differ in various regions. Therefore it should be evaluated carefully and the social facility management should be organized with taking local habits into the account. Medical facilities are crucial elements for sustaining the public health during the operational stage. For instance acidification, which is caused by dams, has a substantial impact on the public health. As it was stated in the report of The International Energy Agency (2002), several chemical compounds emitted to the atmosphere when later deposited deplete the capacity of soil and water to withstand acidification.

Occupational accident risk is also another factor that threatens the human life. The relied risk of any dam failing is approximately 1/10, 000 per year. <https://assignbuster.com/implementation-of-sustainable-development-principles-assignment/>

Worldwide, the collapse of dams has caused more immediate casualties than any other power generation options (McCauley 1996, cited in The International Energy Agency 2002). Consequently, occupational health risk analysis should be taken into the consideration in the planning stage of the project in order to reduce the potential risk of the power station which threatens the community health.

Reservoir storage in the power station may provide easy access to water supply for both society and industry. Reservoir also might be designed for fishing facilities which can create additional job area for the locals. Most of the large reservoirs may offer sustainable stocks of commercially valuable fresh water species. Additionally, the establishment of a hydrophone institute, which is located in the retail park area, may offer an effective sustainability solution in the social aspect. Hydrophone stations require employees who have specific knowledge and qualification in the hydrophone industry.

This institute can provide skilled local employees for operational facilities of the hydroelectric power station in the long term. Consequently, local society can have the opportunity to sustain not only the educational development but also the available employment positions within their region.

### 2. 3 Conclusions

To sum up the sustainable development principles that can be used in our case; Environmental impact of the hydrophone station and carriageways can be minimized with accurate and detailed environmental risk assessments.

Professional consultant companies may assist the contractors manage their design phase with forecasting the environmental risks. The impact of



carriageways can be reduced with building electric railway which is powered by the hydrophone station. From the economic perspective, first of all, cost forecasts of the power station including construction costs and land acquisitions should be calculated accurately. Besides, economic benefits of the project should be shared with the locals not only construction but also in the operation and maintenance stage.

Additional production of the electric can be sold to the neighbor countries in order to generate income for the national budget. Social aspect of the sustainable development is mostly depending on the integration of locals to the project in all phases. A social impact assessment is required in order to implement a successful integration. Public health is also a crucial issue that affects the social sustainability. The effects of dams on people during their construction and operational duration should be taken into the consideration.

Reservoir storage can be used for commercial fishing which can create additional job opportunity. Besides, a hydrophone institute can provide educational development and sustainable employment opportunity. In conclusion, the hydrophone station and its facilities project in Atkinson have major opportunities for implementing the sustainable development. Since the construction stage has significant impact on the environment and society, economic concerns should not prevent the environmental and social sustainability solutions in the planning and design stage. 3.

O Question 2 Many developing countries' governments have preferred to employ private sector entities for public infrastructural investments in the last few decades. This concept has also become a necessity due to

insufficient public budgets and incapability of governments in operating and maintaining the projects. BOOT and BOOT systems are two similar paths for implementing this concept. A BOOT Project (build operate transfer project) is typically used to develop a discrete asset rather than a whole network and is generally entirely new or green field in nature (although refurbishment may be involved).

In a BOOT Project the project company or operator generally obtains its revenues through a fee charged to the utility/ government rather than tariffs charged to consumers. (World Bank undated) On the other hand in a BOOT Project (build own operate transfer project), private entity additionally owns the whole network and aim to compensate its building, operational and maintenance costs directly through the public during its concession period. As it is obviously seen, ownership of facilities is the only distinction between BOOT and BOOT projects. In the BOOT project case, service provider also finance the establishment of operational management.

This difference may generate pros and cons depending on the type of the project. 3. 2 Information and analysis 3. 2. 1 Examining whether BOOT and BOOT systems may or may not be appropriate for this kind of project ; BOOT system BOOT system offers many advantages for host countries, which have insufficient financial and technical qualifications. Consequently, Atkinson a typical third world country can make use of benefits that BOOT system offers in such project. First of all, private companies have innovative methods in forecasting and design in the feasibility stage of the project.

Therefore, private enterprises are more effective in time and cost than governmental establishments in the building stage. Furthermore, hence private companies also design facilities for an effective operational management; they have supremacy in the operational stage in comparison to governments. Besides, since the private companies directly invest the project, they present a financial benefit for governments. Moreover, as governments support BOOT projects, they will attract more foreign direct investments to their countries. BOOT projects also create a demand for the local private sector and the local society.

This demand not only boosts the local economy but also reduces the local unemployment. BOOT projects may also provide technology transfer from developed international some disadvantages, which are mostly originated from technical and financial issues. Firstly, private companies might demand higher fee rates from the government in order to gain more profit in the short-term. Since the government commits to purchase the service from a particular provider during the concession period, the government cannot make use of price breaking method for paying lower fees.

Furthermore, additional costs are incurred to pay a profit to the service provider for the value of its know-how and time in assembling the service delivery infrastructure. (Outsourcing-Law 2014) ; BOOT system As we mentioned above, the financing of the operation and maintenance structure establishment is the only difference between BOOT and BOOT systems. Therefore, BOOT system has already advantages that BOOT system offers. Additionally, as the company owns the whole organization, it has more

incentive for designing a more innovative operational design in order to increase its operational profits.

Disadvantages of this model are also similar to BOOT systems but hence the private company owns the whole organization; the fees of the service can directly affect the end user. Consequently, it may cause additional negative impacts on the society. Another disadvantage is that how the government is able to manage operations as efficient as the private entity even it has no involvement in any stage of the project. 3. 2. Evaluation of the major risks associated with the BOOT system for the power station, carriageway and apartments The BOOT projects must consist of detailed risk analysis in order to allocate the risks among the parties.

Risks in our BOOT project case are substantially originated from the power station. Risk can be summarized into these categories; ; Political risks: In our case, we can regard political risks as country risk. Country risk relates to overall investment climate in a specific country. The aspects that can contribute to country risk are socio-economic condition, internal or external conflicts that inflicting the entry corruptions, ethnic tensions, policy and legal aspects. (Mane and Familiar 2013) The new power station of Atkinson may have vital impact on its neighbors.

For instance, Uzbekistan is vehemently opposed to the project, arguing that it is not safe and that it will give Atkinson unfair control over water resources. President Islam Karamazov has even said that such a project could lead to war. (Trilling 2013) This commentary of Uzbekistan President indicates the high political risk that feasibility evaluation of hydrophone

projects is complicated because it requires a detailed investigation from categorical to hydrological aspects. Existing structures within the construction area may also generate unexpected costs.

For example, the power station in our case started to build in 1976 and thus it has many existing structures recently. The technical assessment of The World Bank also notes that many of the tunnels need repairs, that old machines “ will be subject to frequent breakdowns, and will consequently limit the production of the batching plants,” and that “ concrete production facilities need to be significantly upgraded. (Trilling 2013) Also according to this report, a thick “ wedge of salt” is sitting in a fault line under the project.

If it dissolves, it could create a hollow directly beneath the dam, which could affect the water retaining function or even dam integrity. ; Financial / Economic risks: Currency and foreign exchange risk, interest rate risk, liquidity risk, economic recession in host countries, unexpected inflation rates, and bankruptcy of shareholders or local suppliers, can be potential risks for the BOOT projects in general. So, the host country is the substantial factor in here that affects the BOOT system independent from the project type.

However, The World Bank is a strong figure that minimizes the financial and economic risk within the project. . 3 Conclusions BOOT and BOOT concepts are preferable solutions for financing and managing the infrastructural investments of developing countries of the world. When we compare the BOOT and BOOT procurement systems, the owning procedure generates the distinction. In the large-scale projects like hydrophone stations and their

facilities, BOOT and BOOT systems offer major benefits for governments and societies.

Professional international experience of private entities provides innovative engineering solutions, efficient services with lower costs and technology transferring for local hosts. Direct investment of private enterprises also keeps the local economies alive by decreasing unemployment and attracting other international companies. Additionally, BOOT system might offer a more effective operating management due to whole organization owning structure. Disadvantages of these concepts mostly contain financial concerns.

Fee rates and additional costs of services may put burdens on governments and societies in some cases since the private companies aim to compensate their costs during the operation period. BOOT projects might cause extra social impact, as governments don't own the operation and maintenance structure of the project. Besides their pros and cons, BOOT systems also carry major risks for both governments and private entities. Political and country risks can sometimes be vital for projects like the case we discussed. Technical and construction risks can be determined by feasibility assessments.

Finally, financial and economic risks might contain currency and foreign exchange risk, interest rate risk and economic recession risk in general. In our case, The World Bank is a reputable foundation, which can reduce the financial risks. In conclusion, BOOT and BOOT yester seem favorable for the infrastructural investments with their various major advantages.

Nevertheless, risk assessment plays a crucial role for utilizing benefits of significant sustainable development implementation with both BOOT and BOOT concepts by efforts of The World Bank.