



PROJECT IMPLEMENTATION PLAN

Ref. No.: 21-SN-04-GE-DMP-C-PK02-PP2100010-002

PIP Issue Date	16 November 2021
Project Code	21-SN-04-GE-DMP-C-PK02
Title	Application of Kaizen in Micro Hydropower Turbine Manufacturing
Timing and Duration	November 2021–May 2022
Hosting Country(ies)	Pakistan
Modality	Virtual and face-to-face
Implementing Organization(s)	National Productivity Organization, Pakistan
Overseas Participants	Not Applicable
Local Participants	Not Applicable
Qualifications of Participants	Not Applicable
Nomination of Participants	Not Applicable
Closing Date for Nominations	Not Applicable

1. Objectives

- a. Identify issues and opportunities for productivity improvement in manufacturing micro hydroturbines.
- b. Implement kaizen productivity tools and techniques such as time and motion study and value stream mapping for process improvement.
- c. Demonstrate and disseminate the process and results of project implementation to inspire other organizations and stakeholders to embark on similar initiatives contributing to sustainable productivity growth.

2. Background

Moving economies in a greener direction will create broad benefits. In addition, high levels of resource productivity and the efficient use of energy can result in more dynamic, competitive economies (OECD, 2011). Energy plays a vital role in economic development, particularly in the manufacturing sector. Compared with fossil fuel use, renewable energy generation is cleaner, easier to sustain over time, expanding more rapidly, and sometimes even cheaper than fossil fuels. Renewable energy comes from natural resources that can be replenished during an average human lifetime and includes solar, wind, hydro, geothermal, and biomass power.

Hydropower has many benefits and advantages over other technologies, especially those based on fossil fuels, besides the advantages shared with other renewable sources such as clean, indigenous, local job creation, and security of supply. A micro hydropower system is a nondepleting, nonpolluting energy source that has provided reliable power in the past and is one of the most promising renewable sources for greening the economy. In addition, micro hydropower systems offer stable, inflation-proof, economical, renewable electricity supply using proven, available technologies.

Pakistan has prioritized meeting the UN Sustainable Development Goals (SDGs) and was the first country to adopt the SDG 2030 agenda through a unanimous resolution of Parliament. The 17 goals seek to address a wide range of socioeconomic issues including the environment, which will require meaningful engagement by NGOs, for-profit corporations, and governments for success. The energy sector plays a vital role in economic development, particularly in the manufacturing sector. Pakistan has many rivers, streams, and springs that could be used to generate electricity to meet the energy requirements for off-grid rural residents, cottage owners, small communities, campsites, parks, and remote lodges.

This demonstration company project is part of APO initiatives to raise awareness and promote the application of productivity concepts, tools, and techniques including kaizen in micro hydropower turbine manufacturing. It is also aligned with the APO's Green Productivity (GP) initiatives. GP is a strategy for simultaneously enhancing productivity and environmental performance for overall socioeconomic development. Through dissemination activities in this project, multiplier effects are expected to support sustainable development and productivity improvement in Pakistan.

3. Collaborating Partners

This project will be implemented in collaboration with the following partners as the demonstration companies:

- Green Hydro Engineering (Pvt.) Limited.
- Mukhtiar Engineering Works (Pvt.) Limited.
- S K Hydro (Pvt.) Limited.

4. Modality of Implementation

The demonstration company project activities will be conducted through the virtual modality. When the pandemic situation improves and the resource person(s) is allowed to travel, the face-to-face modality will be adopted.

5. Methodology

The project will be conducted in the following three stages:

Stage 1. Planning (one week)

- a. The resource person(s) analyzes the challenges and opportunities related to productivity through a diagnostic survey of the demonstration companies.
- b. The resource person(s) proposes an improvement plan to the relevant partners and obtains a consensus on a mutually agreeable action plan for the scheduled duration of the project.

Stage 2. Implementation (five months)

- a. The agreed-upon productivity improvement plan is implemented, which may include training, capacity building, modification of existing practices, development of new processes, and applications of new technologies, management tools, and productivity-improvement methods.
- b. The resource person(s), National Productivity Organization, Pakistan (NPO Pakistan), and APO Secretariat communicate at various stages of implementation to review the diagnosis and progress and recommend ways to resolve problems or administrative bottlenecks faced during the project.

Stage 3. Evaluation and Dissemination (one week)

- a. The resource person(s), NPO Pakistan, and APO Secretariat review and evaluate the results of the demonstration project to determine whether the objectives have been achieved.
- b. The NPO Pakistan takes the lead in planning, preparing, and conducting dissemination activities, ensuring multiplier effects of the project in the country. The results and process of the demonstration project are disseminated through locally organized activities and materials derived from the project, such as the final report, training manual, promotional materials, and a demonstration video in a local language (if possible with an English version or English translation).
- c. The NPO Pakistan in consultation with the demonstration companies is expected to submit the project outputs and results for dissemination activities to the APO Secretariat before the completion of this stage.

6. Project Schedule

In the implementation stage, the actual number and duration of consultations will be determined by the resource person(s), demonstration companies, and APO Secretariat after the diagnostic survey of the company.

7. Roles and Responsibilities

NPO Pakistan

- a. Assign a team in the NPO Pakistan to be fully involved in the project and later to be trained as local experts.
- b. Coordinate the overall schedule for implementation of the project in the country.
- c. Provide, in addition to a coordinator(s), the necessary number of technical experts to work as counterparts to the overseas resource person(s) assigned by the APO Secretariat, if necessary.
- d. Arrange all logistic requirements relating to the project (e.g., local transportation, discussion room, interpretation, etc.) for the resource person(s) assigned by the APO Secretariat.
- e. Monitor closely the process of implementation, particularly the key performance areas.

- f. Coordinate and supervise the production of a multimedia record such as video/DVD demonstrating the experience of the demonstration companies.
- g. Collaborate with the demonstration companies in preparing a practical, easy-to-follow manual/guidelines so that similar exercises can be replicated by other organizations in the country.
- h. Guide and assist the demonstration companies in planning, coordinating, implementing, monitoring, and documenting project activities in consultation with the resource person(s) and APO Secretariat.
- i. Conduct dissemination activities such as a workshop, industrial visit(s), and seminar.
- j. Submit a final report to the APO Secretariat which documents the entire process of the demonstration project, analyzes the results and impact of the project as well as contributions to productivity improvement, and suggests recommendations for replication in the host country utilizing domestic talent, networks, and resources.

Demonstration Companies

- a. Accept and facilitate the training and consultancy services conducted by the resource person(s) assigned by the APO Secretariat.
- b. Assign a team and responsible coordinator to work on the project in consultation with the NPO Pakistan, resource person(s), and APO Secretariat.
- c. Provide all necessary inputs and information required for the project and extend all necessary local support to the resource person(s), NPO Pakistan, and APO Secretariat.
- d. Implement all suggestions and recommendations of the resource person(s) based on feasibility and document the results and outcomes of the improvement plans.
- e. Announce, publicize, and prominently display the APO's presence and involvement in the demonstration companies throughout the duration of the project.
- f. Collaborate with the NPO Pakistan in preparing a practical, easy-to-follow manual/guidelines so that similar exercises can be replicated by other organizations in the country.
- g. Present the activities and project results during dissemination activities for the benefit of other enterprises.
- h. Collaborate with the NPO Pakistan in preparing a comprehensive final report for submission to the APO Secretariat explaining the initiatives taken during the project, their technical details and results, as well as an overall analysis of the benefits and impact of the project.

Resource Person(s)

- a. Perform consultancy and training in the areas specified in the productivity improvement plan.
- b. Monitor and evaluate the performance and progress of the productivity enhancement activities of the company.
- c. Assist the NPO Pakistan in developing a training manual and multimedia dissemination materials on the demonstration project.

APO Secretariat

- a. Assign an overseas resource person(s) during specified periods of the demonstration project.
- b. Coordinate communication among the resource person(s), NPO Pakistan, and demonstration companies to ensure smooth implementation of the project.
- c. Monitor the progress of project implementation in consultation with the NPO Pakistan and resource person(s).

- d. Advise the NPO Pakistan and demonstration companies in planning and organizing follow-up activities such as developing promotional materials and/or organizing dissemination workshops or seminars for local participants.

8. Financial Arrangements

To be met by the APO

- a. All assignment costs of the overseas resource person(s).
- b. Up to a total of USD10,000 as local implementation costs for dissemination-related activities. This includes production of a practical manual and multimedia record and holding a dissemination workshop(s)/seminar(s).

The disbursement of expenses will be made at the appropriate time corresponding to the specific activities undertaken and following submission of the necessary supporting documents under the applicable APO rules and regulations for disbursement of project expenses.

To be met by the NPO Pakistan

- a. Expenses for coordinating and implementing the demonstration project such as the assignment of a coordinator and local expert(s) involved.
- b. Partial expenses for dissemination activities (documentation, production of training manual and dissemination materials, dissemination activities, final report, etc.).

To be met by the Demonstration Companies

- a. Expenses for logistic arrangements related to the implementation of the project, including the local travel costs of the APO overseas resource person(s) and local experts for transportation between the demonstration companies/sites and expenses for interpretation.
- b. Costs associated with the purchase, installation, operation, and maintenance of equipment relating to the implementation of the project, if any.
- c. All other expenses for the implementation of the project not covered by the APO and NPO Pakistan.

9. Accounting Procedures

- a. With regard to the local implementation costs for dissemination-related activities (documentation, video production, dissemination workshop, dissemination material, etc.), 50% of the APO share can be advanced after the Project Implementation Plan is issued. The remainder will be reimbursed after the completion and submission of the dissemination materials such as training manual, multimedia record, and final project report together with the submission of necessary supporting documents under the applicable APO rules and regulations for the disbursement of project expenses.
- b. For the settlement of expenses, the NPO Pakistan is requested to provide all necessary proof of payment to the APO Secretariat no later than three months after the dissemination event is conducted. The proof of payment, such as bills, payment records, and receipts, should be issued by third parties and must be submitted to the APO Secretariat altogether at one time. The proof of payment should be written in clear English or with an English translation if not originally in English. The original copies of proof of payment should be provided to the APO Secretariat along with an overall list of expenses categorized based on purpose for the production of dissemination materials or holding a dissemination event (an example is attached as Annex 1). The final payment will be made based on the actual expenditure after the NPO Pakistan submits the proof of payment, training manual, multimedia record, and final project report. In general, internal evidence is not accepted as proof of payment and the expenses claimed by it will not be reimbursed.

10. Final Project Outputs

The demonstration company project will be completed with the submission of the following:

- a. A final report prepared by the NPO Pakistan and demonstration companies.
- b. A practical manual for replication (in soft copies and/or printed hard copies) prepared by the NPO Pakistan.
- c. A multimedia record such as video/DVD of the experiences of the demonstration companies prepared by the NPO Pakistan and demonstration companies.

The APO Secretariat will issue a certificate of completion to the demonstration companies upon completion of the project.

A handwritten signature in black ink, appearing to read 'Dr. AKP Mochtan', with a long, sweeping flourish extending to the right.

Dr. AKP Mochtan
Secretary-General