



AFRICA-ai-JAPAN



iPIC VISIT TO APDK

SUMMARY REPORT

Courtesy of the **AFRICA-ai-JAPAN** Project Office

June 22, 2021

SUMMARY REPORT FOR THE VISIT TO APDK, NAIROBI, ON JUNE 22, 2021

Introduction

This report summarises the findings of a team of researchers from the Innovation and Prototyping Integrated Centre (iPIC) sub-task, that visited the Association for the Physically Disabled of Kenya (APDK) on Tuesday, June 22, 2021 to initiate technical collaboration with the organization. The main purpose of the visit was to explore opportunities for technical collaboration between APDK and Jomo Kenyatta University of Agriculture and Technology (JKUAT), through (iPIC), in research and development of support devices such as wheelchairs, tri-cycles, crutches among others, for persons with disability.

The team that visited APDK comprised:

1. Dr. Eng. H. Ndiritu – Chair iPIC and Head of Delegation
2. Dr. Shohei Aoki
3. Prof. C. Kanali
4. Mr. D. Omondi
5. Mr. B. Oboso
6. Mr. S. Kariuki
7. Eng. B. Ngocho
8. Dr. G. Odhiambo
9. Mr. Jim Maina - Corporate communications
10. Dr. Meshack Hawi

Upon arrival at APDK, the team had a briefing meeting with the APDK Management followed by a tour of the facilities including **Rehabilitation Centre, Wheelchair Workshop** and **Assistive Devices Workshop**. Following the facility tour, a brainstorming session was held by the APDK Management and the iPIC team, to identify potential areas for technical collaboration.

Purpose of the Visit

The purpose of the visit was to explore opportunities for technical collaboration between iPIC - JKUAT and APDK in research and development of support devices such as wheelchairs, tri-cycles, crutches among others, for persons with disability.

Observations

Several observations were made from the meetings with the APDK Management, and from the tour of the APDK facilities. The observations are highlighted in this section for reference in developing a strong and sustainable technical collaboration with APDK.

i) Meeting with APDK Management

From the meeting with the management team of the organization, a presentation was made to the iPIC team from which it was highlighted that APDK collaborates with the Ministry of Health, Ministry of Labour and Social Protection and Ministry of Education in service provision and mainstreaming disability among other government line Ministries. APDK works through a network of 10 Branches namely Nairobi, Kisumu, Kisii, Busia, Siaya, Embu, Machakos, Nakuru, Eldoret and Mombasa, and a total of 15 Satellite clinic sites (An extension of services to those areas not covered by the Branch network).

ii) Tour of the Rehabilitation Centre

APDK runs a Rehabilitation Clinic which is largely supported by donors and well-wishers in provision of rehabilitation services to children with disabilities who may otherwise not access the services. The Physiotherapy conducted at the facility offers assessment, diagnosis and treatment of diseases, injuries and disabilities using either exercise therapy, electrotherapy or manual therapy. APDK promotes early identification and intervention of children with disabilities and offers physiotherapy to persons with disabilities with a bias on children with disabilities mainly from economically challenged families.

Services offered include:

- Surgical intervention/corrective surgery
- Physio and Occupational Therapy
- Assistive technology; Prosthesis fabrication, crutches, surgical boots, callipers, walking frames
- Educational Support
- Home based therapy
- Community Outreach Program

APDK has an established linkage with the College of Health Sciences (COHES), JKUAT and provides training opportunities for COHES students through attachments and internships.

iii) Tour of the Workshops (Wheelchair and Assistive Devices)

APDK has a Wheelchair workshop where assorted types of devices are developed including conventional wheelchairs, tri-cycles and special types of wheelchairs. Assistive devices unit develops products such as prosthetics, walking frames, callipers, and crutches.

Devices fabricated in the Wheelchair & Assistive devices workshops include; -

- Wheelchairs
- Tricycles
- Crutches (Elbow & Axillary)
- Walking Frames
- Walking Canes
- Special Seats (Tumaini Seats, Salama Seats)
- Surgical Boots
- Prosthetics
- Calipers among others

Pictorial view of some of the products developed or serviced by APDK, including wheelchairs, tri-cycles and assistive devices for the physically disabled persons are as shown in **Fig. 1** [1].



(a) Safari Cruiser Wheelchair



(b) Tough Rider Wheelchair with Table



(c) Wheelchair



(d) Steel Framed Commodes



(e) Auxiliary Crutches (Mild Steel)



(f) Standing seating aid (Metallic)



(g) Leather Long leg Brace



(h) Leather Plastic Ankle Foot Orthosis



(i) Leather Surgical Boot



(j) Insoles



(k) Power Wheelchair



(l) Salama Special Seat



(m) Standard Tricycle with Carrier



(n) Knock Down Trike Tricycle



(o) Walkers



(p) Rollators



(q) Adult standing aid



(r) Standing frame

Fig. 1. Assortment of wheelchairs, tri-cycles and assistive devices for physically disabled persons [1].

Possible areas of collaboration

Possible areas of collaboration identified include:

1. Improvement of product design and development, while considering:
 - Robustness
 - Affordability
 - Effectiveness in meeting client need
 - Integration of feedback from customers
 - Cost reduction
 - Product flexibility (in transportation)
 - Standardization (provision for adjustment to suit varied categories of users)
 - Development of motorized wheelchairs/solar powered
2. Development of MoU for concrete collaboration engagements (Expansion of the scope of the MoU under development with College of Health Sciences (COHES))
3. Partnering in assembly of wheelchairs and tri-cycles for local and export markets

Way Forward

- Initiation of capacity building engagements e.g. through short course on Quality welding, Dimension control & Aesthetics in product development, and ISO Standards.
- Follow up on MoU
- Development of the existing designs in 3-D Modelling Software and performance analysis for improved product quality, with desired technical features including:
 - Simple & effective braking system
 - Easy to fix /repair
 - Seat Belts
 - Affordable
 - Footrest option
 - Adjustable features eg for the crutches
 - Indicators & reflectors
 - Various sizes where applicable.
 - Availability of Spare parts
 - Easy to package/transport (Easy to fold)
 - Strong & durable to withstand rough terrain

Conclusion

The visit to APDK presented an opportunity for creation of a strong technical collaboration between iPIC-JKUAT and APDK, for improved quality products for the physically disabled persons within Kenya as well as in the East Africa region. The products developed should be affordable and of high quality standards to meet the needs of the users satisfactorily. Integration of customer feedback in the product development cycle would be key in achieving customer satisfaction, while continuous research and development (R & D) will guarantee sustainable high quality products in the dynamic technology space. Collaboration between iPIC-JKUAT and APDK could start with pursuit of capacity building through training in areas such as Quality Control, Product Aesthetics, Standardization (ISO Standards), and signing of the MoU between the two organizations.

References

[1] <https://www.apdk.org/>