Improving EPI – Equipment Maintenance

Development of a Sustainable Maintenance System for EPI - Equipment in Vietnam

PROJECT VIE/025 - Strengthening the Cold chain in the Framework of EPI

EPI - Vietnam

LUX-DEVELOPMENT
Luxembourg Agency for Development Cooperation

National Institute of Hygiene and Epidemiology

Existing Maintenance System – as of July 2009

- No systematic monitoring and documentation of assets (inventory of equipment, spares)
- No systematic approach to maintenance and repair, no documentation of activities
- No clear responsibilities and communication lines concerning maintenance
- No systematic monitoring and reporting, hence not statistics and no data for planning
- Not enough resources to meet maintenance requirements

Situation Spotlight as of July 2009, Example of one Northern Province

- 179 fridges in province:
- 103 functioning 57%:
- 76 not functioning 42%:

- EPI – Cold chain is impaired, reduced quality
- Financial loss (VND):
  - Investment: 8'377'200'000
  - Used: 4'820'400'000
  - Idle: 3'556'800'000

Viet Nam Country - Conditions for maintenance of EPI equipment

- Very distributed equipment, long distances
- Reliable technical services difficult (impossible) to identify in Communes and Districts and even in Provinces
- Equipment very sturdy, if user maintenance is correctly performed, no regular maintenance by **specialized technical staff** required
- Most faults are easy and simple to correct

What to maintain – Projected Investment Cost of Equipment – July 2009

Investment cost of equipment

No.	Region	No of Provinces	Present Equipment	Projected No. of Equipment	Investment value now (47,000,000 per equipment)	Investment value future	Increase %
1	Northern	28	3'494	7'426	164'218'000'000	349'022'000'000	212.54%
2	Central	11	314	1'893	14'758'000'000	88'971'000'000	602.87%
3	Highlands	4	535	713	25'145'000'000	33'511'000'000	133.27%
4	Southern	20	701	3'265	32'947'000'000	153'455'000'000	465.76%
	TOTAL	63	5'044	13'297	237'068'000'000	624'959'000'000	263.62%

Total Investment approx. US$ 30 Million

Design Criteria for new system

- Additional resources (human, financial) are limited
- Use available resources as much as possible
- Avoid long and expensive travel for simple faults
- Assure adequate documentation to allow meaningful statistics and data for planning
- Install monitoring and supervision
- Establish transparent and effective communication

Maintenance System
Key Concept – All levels

- Increase user competence and assure only trained users handle equipment
- Introduce stringent documentation and reporting system on equipment and maintenance activities
- Establish adequate supervision through higher level

Key Concepts Implemented, Provincial Level

- Introduced Provincial Equipment Manager (PEM)
  - Clear job description and responsibilities made
  - EPI staff, interest in management and technical issues
  - Continue to work for EPI management (part time)
  - Specifically trained for management **and maintenance and basic repair** of equipment
  - Manage and maintain equipment in the province (part time)
- Provided set of tools and basic spares to all 63 provinces

Key Concept, Regional Level

- Introduced Regional Equipment Manager (REM)
  - Clear job description and responsibilities established
  - EPI staff, interest in management and technical issues
  - Continue to work for EPI management (part time)
  - Specifically trained for **management and** maintenance and basic repair of equipment
  - Manage the equipment in the region (part time)
- Established adequate spare part stock
- Either use technical staff of regional institutes for complex repairs or contract competent company (outsourcing contract awarded)

Key Concept, National level

- Introduced National Equipment Manager
  - Clear job description and responsibilities established
  - Logistic and administrative skills
  - Monitor and manage equipment and equipment maintenance
  - Evaluate equipment and maintenance data
  - Prepare statistics
  - Plan future equipment, spares and maintenance on the basis of obtained evidence (evidence based).

Key Concept, Management support

- Register user maintenance on temperature chart – established.
- Include adequate data on equipment and maintenance in EPI – monthly reports
- Included supervision of maintenance in EPI supervision checklist
- Introduced/ modified equipment logbooks to show key equipment data and to register all maintenance activities
- Provided simple charts for use and user maintenance at the equipment

Key Concept, Management support

- Provided “hot line” services to users (PEM) -
- Introduced job cards to register all maintenance activities
- Keep register of all trained users
- Offer regular user training to train transferred users
- Keep register of all PEM
- Offer regular training course to train replaced PEM

Key Concept, Spare parts

- Procured spare parts centrally
- Stock spare parts in regions and provided to “outsourcing contractor” on evidenced of replacement repairs
- Introduced stringent stock management
- Closely documented and monitored spare part use
- Evaluated country wide spare part use on national level
- Re-order spares annually on basis of evidence

Key Concept, Statistics

- Report repair and maintenance activities monthly to national level
- Summarize activities in relevant statistics, i.e.
  - No of breakdowns
  - Regional distribution of breakdowns
  - Cause of problem (if available)
  - Downtime of equipment (min, max, average)
  - Spare parts used, cost of spare parts
  - Cost of repairs (travel, labour)
  - Age distribution of equipment
- Evaluated statistics to improve system performance

Activities to establish maintenance system – Training – Initial training

- Provided initial training for NEM, REM
  - One course, 18 participants, 4-5 days
  - **Management system, documentation, statistics**
  - Basic repair and maintenance
- Provided initial training for PEM
  - Approx. 12 courses with 10 - 12 participants each, 3-4 days
  - Management system, documentation
  - **Basic repair and maintenance**
- Provided initial training for technicians (Regional)
  - One course, 10-12 participants, 5 days
  - Complex maintenance and repairs
  - Documentation of repairs and spare part use
  - User training on the Job

Activities to establish maintenance system – Training – Continuous training

- Plan continuous training due to staff fluctuation, change in equipment etc. and to reinforce maintenance culture
- On National level,
  PEM,REM – two courses / year, 15 pers., 3 days
- On Provincial level
  User courses – two courses per province / year, 20 participants, 1 day