



NORPLAN 

BRIDGING WORKSHOP 11-12TH FEBRUARY 2013 AT MRRD,

Content

- 1 Opening session
- 2 Project overview
- 3 Workshop Agenda
- 4 Hydrogeology session
- 5 GIS Activities
- 6 Training program
- 7 Water supply -Faryab
- 8 List of participants

Capacity Building and Institutional Cooperation in the field of Hydrogeology for Faryab Province, Afghanistan

Opening session.

The purpose of the Bridging Workshop was to present the results and outcomes from the planning phase of the project with proposed activity plans for the next two years implementation period. Equally important to presenting plans was to receive feedback and comments from key sector stakeholders. The invited stakeholders were asked how to make the project better.

Much of the project has focus on capacity building in MRRD covering the rural water supply for which MRRD is the governments lead agency. Information and knowledge about the delicate ground water belongs to all sector stakeholders in Afghanistan who aims at securing better future for all rural people with safe and reliable drinking water. MRRD is a potential user of ground water information as sector leader for rural water supply and sanitation implementation. The jurisdiction for ground water resources management will move from Ministry of Mines to Ministry of Energy and Water Resources (MEW) the were present in the workshop with 4 representatives.



Deputy Minister Tariq Ismati (right) and Director RuWatsIP Ghulam Qader addressing workshop

Message from the Hon. Deputy Minister M. Tariq Ismati, MRRD.

The opening speech presented by Director Ghulam Qader welcomed all it covers developing methods for identifying water sources for rural water supplies. Furthermore, this is also a capacity building program to provide expertise and skills so that staff from MRRD and other key water sector personnel can develop hydrogeological surveys and prepare hydrogeological maps covering not just the pilot province of Faryab but the whole country.

General objectives towards which the project will contribute are to:

- Establish and improved basis for continued development of adequate water points for the rural area in Faryab Province.
- the private sector.
- Build capacity at the provincial level to take up and accelerate the role of monitoring and evaluation.
- Encourage NGOs, private companies and other agencies to continue their water (and sanitation) development efforts with the National Policy Framework.
- Develop an effective coordination mechanism at the national and provincial levels for the sector.



Implementing Ministry MRRD



Funding Agency



Project web page under development for the project. Look at www.norplan.af

Specific objectives of the project:

- Enhance the capacity of MRRD RuWatSip Dept staff and the PRRD staff in conducting investigations and surveys of underground water through a HGS.
- In this regard Faryab will serve as a pilot province.
- Find out better and sustainable solutions for water supply sources taking into account the information obtained from hydrogeology investigations. In this regard Faryab will serve as a pilot province.
- Improve the capacity of MRRD and PRRD technical staff in conducting water quality testing, drilling technologies, and working with the existing management information system (MIS), etc.
 - Develop methodological knowledge of hydrogeology investigations of groundwater sources in Faryab to be used as pilot entry point to other provinces.
- Enable MRRD and PRRD staff
 - To plan and conduct studies of ground water in consultation with MoMI.
 - To improve their technical knowledge and expertise in water supply designs, survey,

Honourable Deputy Minister highlighted that the expectations from the project has be in line with the project plan which emphasised capacity building rather than infrastructure development or construction. This applies particularly to the pilot province Faryab where surveys, plans and capacity building would be covered without any specific construction. This was emphasised in order to balance expectations in the province

Representative from Norwegian Embassy Mr Shinwari

This is a very important project for support by NORAD and Norway. Capacity building is the road to the future and water supply is key for rural development. This project will be followed anxiously from the Embassy and we hope this project will be successful.



Team leader Dr. Svein Stoveland, Norplan

Project Overview- general progress, status and outline plans, Dr. Stoveland

Dr. Stoveland greeted the participants and was pleased that so many came to participate in the workshop. Reviewed the terms of reference and reminded us of our discussions in the inception workshop one year ago.

during the inception workshop and tried to make this into a coherent approach for the different areas of activities.

We have experienced some delays particularly in linked to GIS and planning for water supplies in Faryab, but we hope we are now picking up good progress now.

In order to keep everybody updated about project activities and progress, we have started developing a web page which gives an overview of project activities and events. It covers planned activities for all the activities which are described below and which will be discussed during this seminar.

The project has a number of components and each component has facets of importance. During the following days we will discuss in greater depths the key project areas which covers:

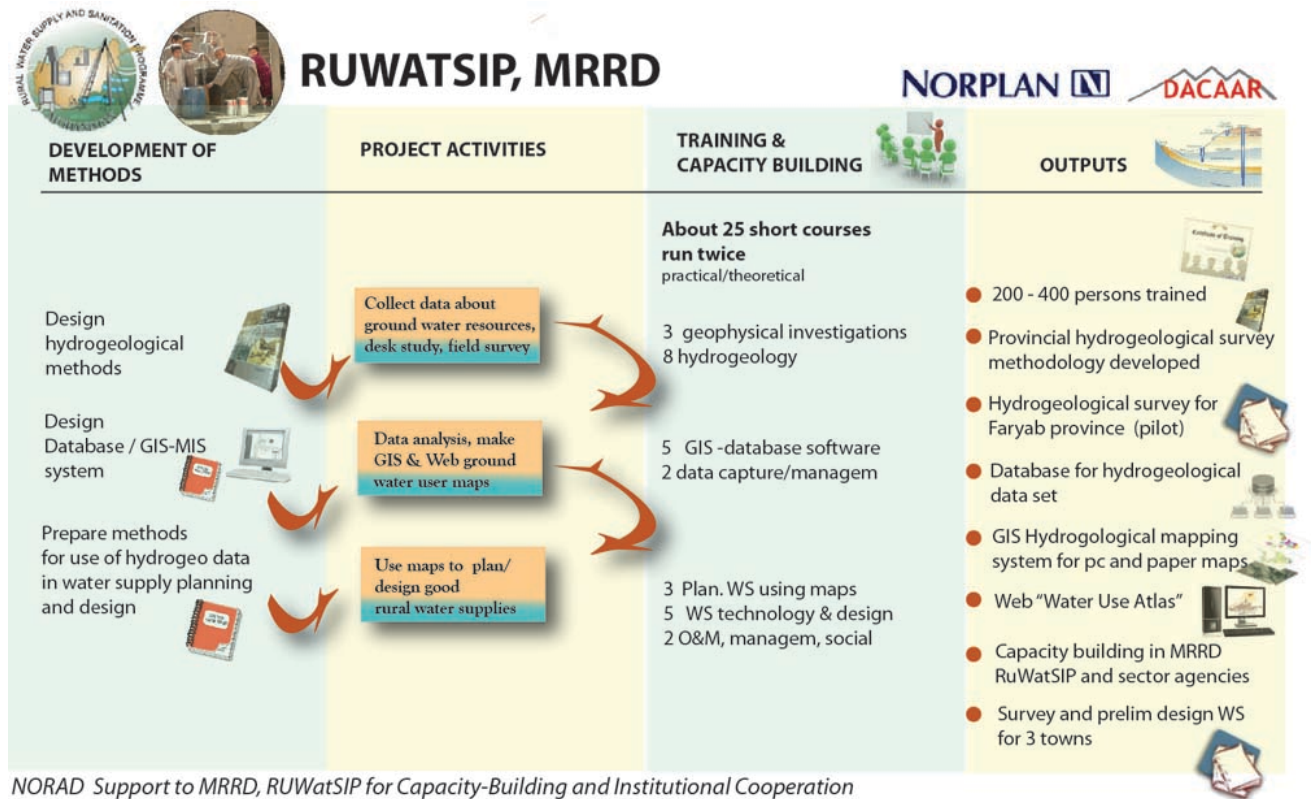
- Hydrogeology
- GIS or information management
- Water supply and sanitation survey and planning
- Capacity building and training

- Project management

In addition each of the project facets or themes and indicated above has at least three stages

1. **Develop a method /or design a system.**(done once by expert in the beginning of the project.
2. **Use method or system to develop** a plan using Faryab as a pilot province. (work done by Norplan, its partner(s) and the client.
3. **Use developed methods and systems to train sector** staff for replication of mapping for the rest of Afghanistan. (capacity building for replication by local sector agencies.

See diagram below which reflect the above.



NORAD Support to MRRD, RUWatSIP for Capacity-Building and Institutional Cooperation in the Field of Hydrogeology for Faryab Province, Project



*Dr. Naqib Taib
chairing well
though all sessions!*

Agenda 10th February 2013 (DAY 1)

Opening session: Bridging workshop

- 9:00 Recitation of Holy Quran
- 9:05 Welcome, Dir. Qader
- 10:10 Opening speech, Deputy Minister T.
- 10:10 Words from representative from Norwegian Embassy
- 10:25 Project Overview- general progress, status and outline plans, Dr. Stoveland

10:40 Tea break

Technical session part 1: Hydrogeology

Chairman: Dr. N. Taib

- 10:15 Hydrogeological survey, General principles and methods. Practical field work , planning and status. Outputs D. Banks
- 10:45 Practical field work, activities, planning status and findings till date? D. Banks
- 11:00 Working environment and security situation, Faryab. Eng Hassan
- 11:15 Geophysical logging as a possible tool. Options for use of drilling capabilities. Three possible options.
 - Options for use of drilling capacities/resources: Three possible options. D. Banks
- 11:25 Feedback from local discussions among hydrogeologists in Kabul. Prof Eqrar.
- 11:35 Group discussion: Descriptions of possible options. D. Banks
 - How to use our drilling resource under this project
 - Geophysical borehole logging.
- 12:10 Report from groups, (5 min each) General work plan and way forward.
- 12:35 Summary of session

Technical session part 2: GIS- MIS and data management

Chairman: Dr. N. Taib

- 14:00 Process for developing the GIS framework for HGS and status : N. Abrar.
- 14:15 Expectations and demands for a GIS system to manage hydrogeological data, D. Banks
- 11:15 GIS- MIS organization in RuWatSIP., Prof Zarinkhail,
- 14:15 Plans an expectations for database development and GIS systems for:
 - Hydrogeological data and GIS system, Description and demonstration, Prof. Zarinkhail
 - Development of data for WSG / water supply data base for functionality and water quality information, UNICEF support with assistance of ARTS consultants, by Mr. Adane Bekele, UNICEF
 - MIS information management In RuWatSIP, Prof. Zarinkhail
- 14: 50 Institutional development/ arrangement yet to be worked out. Prof Zarinkhail
- 14:55 Introducing group discussion themes: Who, where to collect, check and enter data? How should the information be presented to be most useful? Improvements on proposed approach?
- 15:00 Tea
- 15:10 Group discussions
- 15:30 Reports of discussions, recommendations and

15:50 Session summary/ closing day 1.

11th February 2013 (DAY 2)

9:00 Technical session part 3: Training and capacity

Chairman: Dr. N. Taib

- 9:00 Technical session part 3: Training and capacity building.
- 9:00 Context and process for development of the training and capacity building plans framework. Dr. Stoveland
- 9:15 Training needs assessment, proposed training and courses. Prof. Eqrar
- 10:00 Tea
- 10:10 Draft Course Calendar, A. Nordbø
- 10:20 Discussion sessions:
 - Any courses we could remove or add.
 - Target groups, others to be covered?
 - Course calendar advise?
- 10:50 Presentation of discussions from target groups
- 11:10 Summary of session.

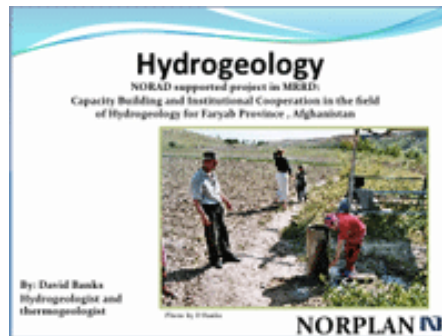
11:20 Technical session part 4 Water supply surveys and design

Chairman: Dr. N. Taib

- 11:20 TOR and assignment and process for preparing water supply preparation activities in Faryab. Status and challenges. Dr. Stoveland
- 11:35 Launch workshop in Faryab and proposed way forward, Dr. Taib
- 11:45 Gaps in water supply coverage and identification of towns for including in approach of identifying towns for surveying.
- 12:00 Needs and requirements for water supply exploration. Dir. PRRD
- 12:15 Abrar: Introduction to discussion groups
- 12:45 Presenting group feedback.
- 13:00 Summary of discussion, Stoveland
- 13:15 Lunch
- 14:00 Conference summary
- 14:15 Closing workshop, Director RuWatSIP

Technical session part 1: Hydrogeology

The whole power-point presentation can be found on www.norplan.af under the reports from the bridging workshop



David Banks guides us through technical session covering hydrogeology but started with defining

the

OBJECTIVE (of hydrogeological survey):

To improve possibilities of successful and sustainable groundwater resources development:

1. A good functional database / GIS
2. Collation of all existing data
3. Collection of additional hydrogeological data in the field
4. A web-based interactive hydrogeological atlas of Faryab
5. A "paper format" Atlas

He covered many issues including describing what Hydrogeological survey is. He started dividing the work into three components like **HYDRO-GEOLOGICAL - SURVEY**.

The HYDRO component consist of:

Data on the existence and behaviour of water

- The level of the water table
- The quality of the groundwater
- The yield of groundwater
- Rivers (flow, elevation, quality)
- Rainfall/Snowfall (recharge)

The GEOLOGICAL components:

Data on the existence and behaviour of the rocks and sediments

- The outcrops of different rock types
- Their distribution with depth
- Their hydrogeological properties (transmissivity, storage, porosity)
- Their chemistry

The SURVEY components:

The location of these data (wells, boreholes, springs, karezes, rivers):

- In x and y dimensions (GPS location/grid reference)
- In z dimension (elevation and depth)
- In t dimension (when were the data collected?)
- Metadata (who collected the data, where were the samples analysed, who drilled the well?)

With the above presented Dave illustrated how the data collected and analysed would be presented in hydrogeological maps for future users.) (see web). What was happening now and progress and plans:

Existing data has been collected. Most data has been gathered from the DACAAR database, but also from other sources including MRRD, SCA, NCA, Intersos and others. This data covering water features has been checked and entered into a cleaned excel table ready for entry into a GIS mapping system about to be prepared.

Field surveys has been planned and is already in progress covering:

1. Precipitation data (Rain/snow sampling)
2. Ground water features (further surveys of about 200 features)
3. Soil salinity survey
4. Soil sampling
5. River profile survey

Work was planned to start this spring, but DACAAR has moved very fast and already precipitation data has been submitted to testing laboratories in UK for analysis. Many soil samples have also been collected as well as water samples. **Actually the field sampling survey is now ahead of schedule** thanks to DACAAR's accelerated moves.

Geophysical investigations in Faryab is planned to start summer 2013 and continue till completed. MRRD has staff to assist with this work.

The **drilling explorations activities** are to be finalised in 2013 and implemented in 2014.

Professor Eqrar reported from a small workshop with top Afghan hydrogeologists (from MRRD, MoM, DACAAR, NCA, University and other) discussing alternative ground water exploration needs for Faryab. The following was considered:

1. Deep borehole Andkhai
2. River-aquifer interaction at test site adjacent to ShirinTagab River, in Shirin Tagab district
3. Groundwater resource west of Maimana Airport
4. Investigation of palaeochannels to the Kelif Uzboy
5. Deep Drilling in the Almar / Qaysar centers

The group recommended to focus on two places, at Mayane Airport and ShirinTagab so as to know two expected major aquifers in the province better.

Introducing Group discussion

Improved new understanding of hydrogeology: Possible new equipment

Geophysical borehole logging equipment:

- Natural gamma radioactivity
- Electrical induction
- Caliper
- Fluid temperature / conductivity
- Video camera

Questions:

1. Is it worth the money?
2. Does MRRD have enough use for it?
3. Is MRRD the right location for such equipment? (MoM already have similar equipment for mineral prospecting)
4. Would it be better to regard the equipment as an inter-Ministry resource?
5. How will the equipment be made available to NGOs or to private organisations (should be a competitive cost model)?

Response from Participants: Procurement of equipment

Yes geophysical logging equipment needed and should be procured. But first run adequate training courses

Drilling / further investigations

We have three choices:

1. We have enough data already !! We don't need to do any additional drilling
2. We should carry out assessments and drill at a small number of prioritised villages where there is an acute need for water supply

(problem....we shouldn't start raising expectations unless we know that we have enough money to construct a water supply infrastructure)

3. We should drill at one or two localities, prioritised by hydrogeologists, which will increase our understanding of groundwater resources and the behaviour of the aquifers.

What do you think??

Response from Participants: further drilling explorations

We need further explorations. It was proposed that the drilling explorations should be limited to 3-4 places including:

- Maymane
- Sherin Tagab
- Qaysiar
- Andhoy

For the powerpoint presentation buy David Banks look at web:
http://www.NorplanAf/Presentatons/Lecture_d_banks/DBanks1.htm

Technical session part 2: GIS- MIS and data management

Background to the delayed activities with GIS:

Eng N. Abrar introduced this session. An introduction was necessary since the GIS component has been significantly delayed in the project. The reason being that the topic is very technical and when the project started it became clear that RuWatSIP did not have the necessary competence in its own organization to carry out a professional technical dialogue with the different consultants from NORPLAN, Wash Cluster and UNICEF support ARTS consultants. RuWatSIP had and still has a need to coordinate the information management and this should be done in such a manner that information from different databases could be complementary to each other. The technical challenge in RuwatSIP was resolved when NORAD agreed that a full time GIS adviser could be supported for two years by NORAD under the current capacity building project. Now finally in December 2012, the adviser was in place and the development of the GIS system could start in proper. Some work has been done before, but first now could a coordinated MIS-GIS framework development start. This is now in progress and Prof. Zarinkhail is as the full time GIS adviser helping to establish a MIS-GIS unit in RuWatSIP.

(<http://www.norplan.af/Presentatons/Abrar%20Presentation-1.htm>)

See the whole presentation by Prof. Zarinkhail on www.norplan.af.

Starting up the MIS-GIS activities in RuWatSIP covering NORAD and UNICEF sponsored activities.

Professor Zarinkhail, GIS-MIS Advisor for NORPLAN and RuWatSIP presented GIS development for Faryab province.

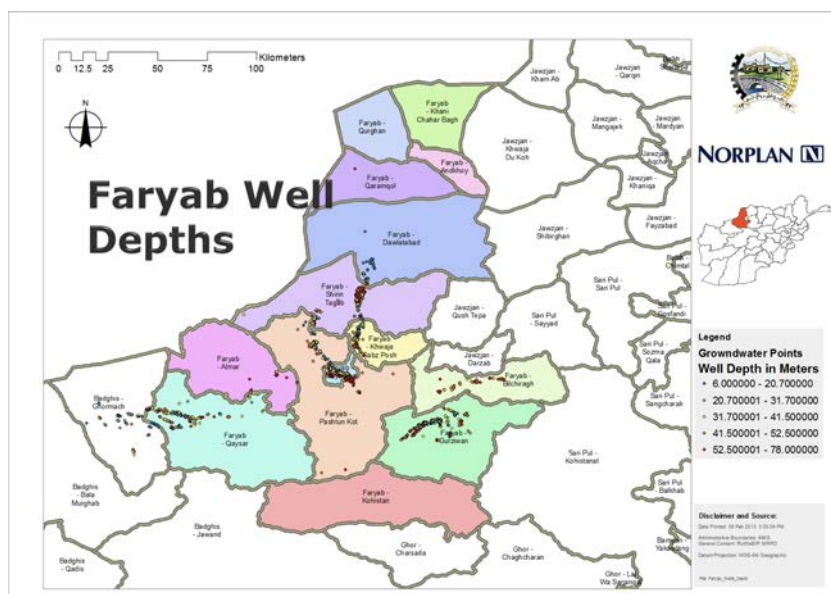
It was explained the work focus of NORPLAN Afghanistan is in Faryab province and its beyond districts from neighbouring provinces. Project GIS will focus on this province and it will be used as a sample for other provinces countrywide. The following data types are required for the GIS for Faryab.

- Ground water points including different types of wells (dug well, bore well, ...)
- Springs feeding pipe networks
- Karezes
- Geological and hydrogeological base-maps
- Additional geological data e.g. river flows, rainfall, etc
- Ground water quality data i.e. measurements, test, ...

GIS Existing Data:

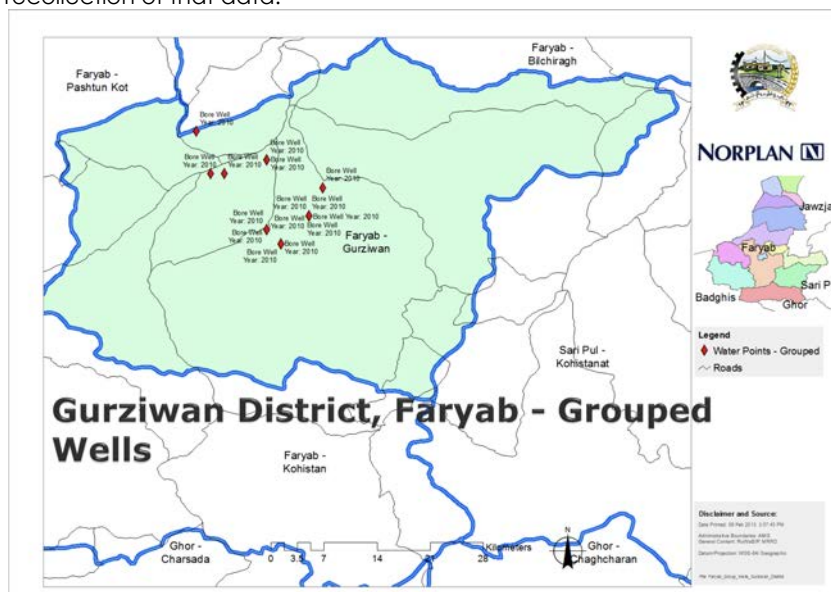
The ground water points data for the whole country do exist. From about 20 years different organizations are active in the whole country in this area; specifically, in Faryab province data from some sources are available and can be used to feed the project GIS. The available data on water points and similar structures belongs to DACAAR, INTERSOS, NCA, NSP, SCA and MRRD (RuWatSIP). The total number of records for this sector shows around 135,000 groundwater points. Some data can also be extracted from old Soviet maps.

However, the water points data is in different formats. Some records have more than 30 fields details while some other have less than 20 fields. In general, similar fields of data for almost all do include: organisation, water point type, construction year, GPS coordinates, depth, pump type (only those which have hand pumps). An important aspect for GIS is the GPS points. Unfortunately, out of the above figure only 42,000 groundwater points have GPS coordinates in the whole country. About 2,800 of the groundwater points which has GPS coordinates are in Faryab province where the NORPLAN is active.



Existing Data Quality:

Some of the existing data of groundwater is recorded as groups of water points. In such cases, only one record represents group of water points and/or structures. When mapping, that data can be shown only under one symbol. For some activities this type of data is fine; however, for some detailed reports and activities such data might need further clearance or recollection of that data.



Data Clearance:

The existing data might need further checking and clarifying. NORPLAN has hired international experts to do this activity. By the time being, about 1,200 records of groundwater points are checked and ready to use in project database and GIS.

Groundwater quality data is another aspect that NORPLAN focuses on, for Faryab province and DACAAR act as implementation partner on it. The water quality data records measurement record, water test record, maintenance record and monitoring record.

UNICEF Plans and Expectations:

Mr Adane Bekele, WASH Specialist from UNICEF, presented their plans on water, sanitation and hygiene program in Afghanistan. According to MICS 2011, 57 percent of the whole people in Afghanistan household are using improved sources of drinking water. In rural area only 51% and in urban 82% household have this facility. However, figures and percentage for using improved sanitation facilities are much lower than safe drinking water. Only 29% in the whole country, 24% in rural and 51% in of household in urban areas are using improved sanitation facilities.

UNICEF Water, Sanitation and Hygiene Programme in Afghanistan



Bridging workshop: Capacity-Building and Institutional Cooperation in the Field of Hydrogeology for Farvab
Adane Bekele



For effective and sustainable WASH, 3 main activities are required: enabling environment

Figure 1. Percentage of household members using improved sources of drinking water

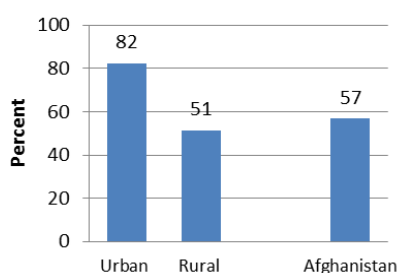
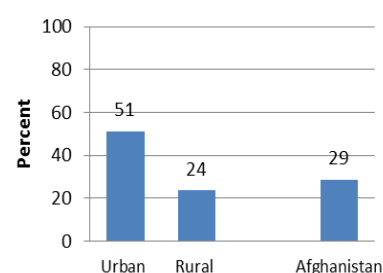


Figure 2. Percentage of household members using improved sanitation facilities



improved, behavioural change, water and sanitation service. UNICEF support for water quality on:

- Construction of new water supply schemes
- Use and sustainability of community water supplies (O&M)
- Water quality
- M&E / GlS-MIS
- Capacity strengthening

(<http://www.norplan.af/Presentatons/UNICEF%20Water,%20Sanitation%20and%20Hygiene%20Programme%20in.htm>)

UNICEF 2013-14 Support:

In water supply for Afghanistan, UNICEF provision of safe water supply includes:

- Support MRRD on developing an operations and maintenance strategy for community water supply schemes
- Support MRRD on water quality: testing and monitoring system, development of Water quality standard and national water quality database.
- Support MRRD to designing a sector-wide strategies for rural WASH sector
- Support MRRD establishment of permanent water quality in testing and monitoring network in rural areas to monitor changes in drinking water quality.
- Support MRRD on collection of water supply schemes from 10 provinces to operationalise the MIS/GIS database (Uruzgan, Zabul, Paktika, Paktiya, Kandahar, Helmand, Daikundi, Bamyan, Ghor and Badghis)

The Way Forward:

One of the goals of NORPLAN is to develop a hydrogeological map atlas and disseminate hydrogeological information in this atlas. For this purpose, close coordination with the RUWatSIP as well as other organization that involve in similar activities is required. Data stream and deliver trainings in such activities can help the NORPLAN to achieve this target.

Our plan is to achieve the targeted activities in 3 main groups: develop geodatabase(s) to record and represent project data on GIS, combine geological and hydrogeological map atlases for Faryab in PDF and make them available online, develop and ad hoc online system represent a web atlas for Faryab province.

See the whole presentation by Prof. Eqrar on www.norplan.af.

Technical session part 3: Training and capacity building

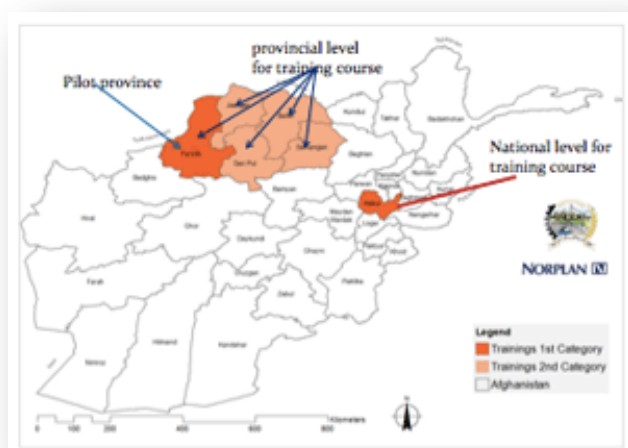
Professor Eqrar presented the development and status under the project for training and capacity building.



The main objective of the whole project is that expertise and capacity should be developed within MRRD and the sector so that activities can be replicated. For this adequate knowledge and expertise will be developed so that MRRD and sector partners can continue to prepare hydrogeological maps and surveys for all provinces in the country and maintain such technical information system for use by engineers and developers working in rural water and sanitation facilities in the country. The issues presented included:

- Training organization
- Training need assessment
- Training Modules and Topics
- Training course documentation
 - Training course summary sheets
 - Capacity building training plan ,
 - Guidelines for presenters ,
 - Training course outline and
 - Course evaluation.
- Material, equipment need for training courses of Hydrogeology

A training needs assessment has been conducted. From the survey, it is quite clear that expert competence in hydrogeology, GIS and water supply planning is concentrated in the capital Kabul. Thus for specialist courses covering hydrogeology, GIS, water supply and sanitation planning, the courses will have to be arranged where the benefactors are located.



Activities associated with project implementation for field surveys, data collection, drilling activities, more activities can be handled at project and provincial levels. The training needs assessment identified too few properly qualified staff in Faryab to justify running a course only for that province. It would be logical to include more provinces so as to have a reasonable size of participants for effective training. As such, it has been proposed to look at the northern provinces as indicated in the map. Work is still ongoing to assess who will be involved in data collection, data entry and data cleaning for the GIS and data base. UNICEF, MRRD and Norplan are surveying and assessing who and how the institutional system should be for sustainability.

(<http://www.norplan.af/Presentations/Bridge%20workshop%20final%20one11.11.htm>) see also training section of on www.norplan.af

Training topics:

A course training plan has been prepared as shown in the tables below. Focus has been placed on the hydrogeology because this is the focus on the whole project; knowledge on ground water resources to plan rural water supplies better. The courses have also been made to meet the

training needs for specialists and well as for technicians. This was discussed in the inception workshop and further developed since.

The courses have in general been given focus on 50-50 practical and theoretical training and being short courses of about 2-5 days duration.
Yes geophysical logging equipment needed and should be procured. But first run adequate training courses

Training course documentation

For the training courses much has been done for the documentation and preparation of the courses. There are still some documents yet to be prepared by the different course presenters and the training personnel. This documentation will make it easier for continuing the training at many training facilities as needed also after the end of the project. Documentation to be prepared covers:

1. **Project Summary Sheets**
 - a. One page documentation describing the course, objectives, scope, duration and focus group for training.
2. **Guidelines for course presenters.**
 - a. Instruction for each of the course presenters how to design the course, training methods, agenda, training aids and practical work where appropriate.
3. **List of courses (tabular overview of courses)**
4. **Course information to participants**
 - a. Brief 1-3 page Course Information Sheet to potential course participants describing the course, focus for training, duration, who will benefit from the training and intake requirements.
5. **Course calendar**
 - a. A calendar will show when each of the courses are to be held showing planned training courses for the next 12 months
6. **Course handouts.**
 - a. Handouts will be prepare at least 2 weeks before the course is held and issued during the course. The course managers will copy and make available the material as appropriate.

Updated information:

The project will use the web page www.norplan.af where updated information will be circulated to sector stakeholders. Using this format for dissemination of information can facilitate reaching benefactors and sector stakeholders in an effective manner.

Practical training:

Much of the training will be combined with practical training courses. For this special equipment will be procured and participants will be training how to use field equipment like geophysical testing equipment, borehole loggers, field water testing kits, soil sieving tests, In addition, computers will be made available for training of selected software needed for conducting hydrogeological analysis and for making use of hydrogeological information for planning water and sanitation facilities.

Professor Eqrar focussed on the training in general on hydrogeology in particular.

It's a fact that within the area of GIS- MIS we are delayed in the project. Fortunately we now have prof. Zahinkhail to make remedies and help us move the project move forward. Zarinkhail only joined the project team in December 2012 and has recently started. **A. Munir** is assisting the GIS component in the project particularly covering the institutional arrangements needed to secure a sustainable data gathering system in MRRD. He emphasized . However, involving and training



relevant people at national level and at provincial and project levels is essential to make systems sustainable.

Language (English) can sometimes be a barrier for involving local staff, but it is not possible to use a system where y data can be entered the computer in English, Dari or even Pastun languages. Training and development under this project will also make an effort to train and involve government staff at national and provincial levels even though they are not conversant in English. This can motivate government staff if they can also participate in development using modern technology. Our project will do what we can to facilitate this development.

Munir is already involved in similar development efforts in Ministry of Agriculture (MAIL) as we will do our utmost to involve staff from the provinces in general and from Faryab in particular to benefit from technology development. The project should now link closely with the provinces and the parallel project supported by UNICEF in RuWatSIP in order to find lasting and sustainable institutional arrangements for information management in the water supply and sanitation sector.

Table 1: Proposed training courses.

#	Training Modules and Topics	Focus groups
1	Hydrogeology I	
1.1	Groundwater Investigation: Geological, hydrological and meteorological studies. Origin, occurrence of groundwater, collection of water sources data. Exploratory drilling, selection of drilling sites, decide which type of drilling rigs. Well field protection, zoning, EIA.	Graduates in hydrogeology and technicians
1.2	Geophysical survey (VES, IP, well logging)	Geophysists, technicians, water engineers
1.3	Well drilling methods and types, drilling supervision and analysing lithology, drilling penetration rate, rig action, lithological logging, well design, designing of gravel packing. Well problems and failure, well maintenance, camera inspection.	Hydrogeologists, technicians, drilling group
1.4	Water well design, completion and development. Based on drilling lithological log, time log, drilling action log and geophysical log, analyse and select pipes and filter intervals, use of software for well design. Well assembly, lowering of assembly, gravel packing. Development of well, compressor development and testing with air or over pumping	Hydrogeologists technicians, drilling group
1.5	Well Hydraulics: Testing water wells for drawdown and yields, Converging flow, Cone of depression, Equilibrium well formula, non Equilibrium formula, multiple step drawdown test, aquifer performance test.	Hydrogeologists, technicians, pumping group
2	Hydrogeology II	Σ
2.1	Interpretation of hydrochemical and microbiological data. Understanding chemical, physical and microbiological quality of water.	Hydrogeologists and chemist
2.2	Preparing of thematic maps, using software	Engineers, technicians, hydrogeologists
3	Training methods	Σ
3.1	Training of trainers methods	Trainers MRRD, NGOS, others
3.2	Best practice in preparing training material and manuals	Trainers MRRD, NGOS, others
4	GIS-MIS for hydrogeological information	Σ
4.1	ArcGIS Software Introduction	Staff at RGIS unit, MRRD and Daccaar
4.2	ArcGIS Databases	Staff at RGIS unit, MRRD and Daccaar
4.3	ArcGIS Spatial analyses	Staff at RGIS unit, MRRD and Daccaar
4.4	RGIS viewer, administration	Staff at RGIS unit, MRRD

4.5	RGS Viewer, how to use	Staff at RGIS unit, MRRD, Daccaar, Unicef
4.6	RGIS design and GIS in general. Overall introduction to its actual content and how it is planned	Managers and staff at RGIS unit, MRRD, Daccaar, Unicef who wish to be introduced to the RGIS and GIS concept
4.7	Data Management. Comprehensive theoretical issues related to data management of spatial data. Topics related to standardisation and modelling specifically, and provide hands-on training	RGIS staff and selected staff at MRRD, Daccaar and Unicef
4.8	Data Capturing. Comprehensive theoretical training on topics related to data capturing, geo-referencing, and data conversion. Examples from hydrology and hands-on training are preferable.	Committed Managers, RGIS staff also at district level, DACCAR and UNICEF personnel
4.9	Cartography. Comprehensive theoretical training on topics related to cartography, included practical example and hands-on training.	Committed personnel working with GIS analysis and map output at RGIS, MRRD and DACCAR
5	Water and sanitation	Σ
5.1	Planning water supply and sanitation using water atlas	Hydrogeologists, water eng, gov, consult students
5.2	Conceptual design of water and sanitation based on sustainability and affordability. Assessment of water technology to use in ground water areas with potential saline waters.	National, prov. engineers, hydrogeologists
5.3	Planning and implementation of O&M for rural water supplies	Hydrogeologists, Water eng, Gov, consultants, students
5.4	Social aspects of Water and Sanitation, WASH policy, gender issues	Water eng, Gov, consultants, students
5.5	Water supply network design using software like WaterCad, WaterGEMS from Bentley or EPANET.	Water engineers, design, MRRD
5.6	Training in use of total station for water/wastewater, network survey	Surveyors, engineers, MRRD
6	Post graduate training	Σ
6.1	Candidates for degrees in hydrogeology	Scholarships Afghan candidates
6.2	Candidates for higher degrees in hydrogeology	Scholarships Afghan candidates

Table 2: Course duration and planning data.

No	Training Modules	Duration days		Partici - pants	No. of Cour- ses	by	MRRD contact person
		theor y	pract ical				
1	Hydrogeology I	14	15	55	10		
1.1	Groundwater Investigation:	3	3	15	2	Dr. Najaf	Safi/Taib
1.2	Geophysical survey	5	2	10	2	deJong	Safi/Taib
1.3	Well drilling methods	2	2	10	2	Eng. Asaad at AGS	Safi/Taib
1.4	Water well design,	2	3	10	2	Dr. Alim/ Essan	Safi/Taib
1.5	Well Hydraulics:	2	5	10	2	deJong	Safi/Taib
2	HydrogeologyII	4	6	20	4		
2.1	Interpretation of hydrochemical and microbiological data.	2	3	10	2	Hassan /Jawed	Taib
2.2	Preparing thematic maps, using software	2	3	10	2	Hassan /Jawed	Taib
3	Training methods	4	2	40	2		
3.1	Training of trainers methods	2	1	20	1	DACAAR/ WETC	
3.2	Best practice in preparing training material and manuals	2	1	20	1	DACAAR/ WETC	
4	GIS-MIS for hydrogeological	20	0	80	9		

4	GIS-MIS for hydrogeological information	20	0	80	9		
4.1	ArcGIS Software Introduction	3	0	10	1	Supplier of ArcGIS	Zarinkhail
4.2	ArcGIS Databases	2	0	10	1	Supplier/ArcGIS	Zarinkhail
4.3	ArcGIS Spatial analyses	2	0	10	1	Supplier/ArcGIS	Zarinkhail
4.4	RGIS viewer, administration	3	0	5	1	GI-MIS unit	Zarinkhail
4.5	RGIS Viewer, how to use	1	0	10	1	GI-MIS unit	Zarinkhail
4.6	RGIS design and GIS in general.	1	0	10	1	GI-MIS unit	Zarinkhail
4.7	Data Management.	5	0	5	1	GI-MIS unit	Zarinkhail
4.8	Data Capturing.	1	0	10	1	GI-MIS unit	Zarinkhail
4.9	Cartography.	2	0	10	1	GI-MIS unit	Zarinkhail
5	Water and sanitation	13	2	92	12		
5.1	Using water atlas	2	0	20	2	Norplan /MRRD	Naim
5.2	Conceptual design of water and sanitation	3	0	20	2	Dr. Stoveland	Naim
5.3	O&M for rural water supplies	1	0	30	2	DACAAR/WETC	Naim
5.4	Social aspects of Water / Sanitation, WASH policy, gender issues	3	0	10	3	DACAAR/WETC	Logarwal
5.5	Water supply network design using software	4	0	5	1	Regional expert	Naim
5.6	Use of totalstation-water/wastewater,	0	2	7	2	Local expert	Naim
6	Post graduate training						
6.1	Candidates for longer general training	18 mont hs			Applic.		Polytec. University
6.2	Candidates for universitytraining	40 mont hs			Applic.		Universities

Below is the training course tentative calendar

Check Norplan.af for updated calendar

(http://www.norplan.af/images/Training_Calendar_2013_14_pz2000.gif)

Proposed Training Calendar for 2013 and 2014

Training Calendar 2013

Month	Jan	February	March	April	May	June	July	August	September	October	November	December
Week no	1 2 3 4	5 6 7 8	9 10 11 12 13	14 15 16 17	18 19 20 21	22 23 24 25	26 27 28 29 30	31 32 33 34	35 36 37 38 39	40 41 42 43	44 45 46 47 48	49 50 51 52
Date of first day of week	5 12 19 26	2 9 16 23	2 9 16 23 30	6 13 20 27	4 11 18 25	1 8 15 22 29	6 13 20 27	3 10 17 24 31	7 14 21 28	5 12 19 26	2 9 16 23 30	7 14 21 28
Saturday												
Sunday												
Monday												
Tuesday												
Wednesday												
Thursday												
Friday												

Public holidays

Key code:

Hydrogeology I (Norplan)

- 1.1 Ground water investigation, 6 daysx2
- 1.2 Geophysical survey, 7 daysx2
- 1.3 Well drilling methods, 4 daysx2
- 1.4 Water well design and completion, 5 daysx2
- 1.5 Well hydraulics, 7 daysx2

Hydrogeology II (DACAAR)

- 2.1 Interpretation of data, 5 daysx2
- 2.1 Preparing thematic maps, 5 daysx2
- 3.1 Training methods, 2 daysx2
- 3.2 Best practice, 2 daysx2

Training of trainers (DACAAR)

GIS

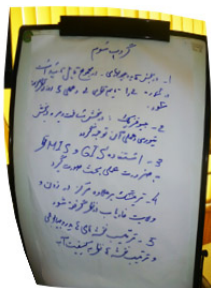
- 4.1 ArcGIS software, 3 days (supplier)
- 4.2 ArcGIS Database, 2 days (supplier)
- 4.3 ArcGIS Spatial Analyses, 2 days (supplier)
- 4.4 RGIS viewer administration, 3 days (Norplan)
- 4.5 RGIS viewer how to use, 1 day (Norplan)
- 4.6 RGIS design, 1 day (Norplan)
- 4.7 Data management, 5 days (Norplan)
- 4.8 Data capturing, 1 day (Norplan)
- 4.9 Cartography, 2 days (Norplan)

Water and sanitation

- 5.1 Planning using water atlas, 2 daysx2 (Norplan)
- 5.2 Conceptual design 3 daysx2 (Norplan)
- 5.3 O&M 1 dayx2 (DACAAR)
- 5.4 Social aspects, WASH policy, 4 daysx2 (DACAAR)
- 5.5 Water network design 4 days (regional expert)
- 5.6 Totalstation, use of, 2 daysx2 (regional expert)

Training Calendar 2014

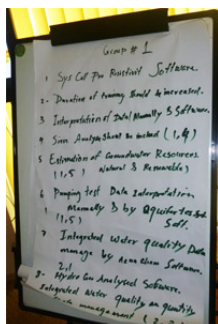
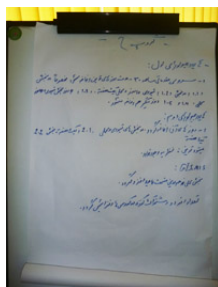
Month	Jan	February	March	April	May	June	July	August	September	October	November	December
Week no	1 2 3 4	5 6 7 8	9 10 11 12 13	14 15 16 17	18 19 20 21	22 23 24 25	26 27 28 29 30	31 32 33 34	35 36 37 38 39	40 41 42 43	44 45 46 47 48	49 50 51 52
Date of first day of week	4 11 18 25	1 8 15 22	1 8 15 22 29	5 12 19 26	3 10 17 24 31	7 14 21 28	5 12 19 26	2 9 16 23 30	6 13 20 27	4 11 18 25	1 8 15 22 29	6 13 20 27
Saturday												
Sunday												
Monday												
Tuesday												
Wednesday												
Thursday												
Friday												



Group work covering Training:

Group work was conducted to assess whether the sector status was as outlined in the TOR or if later significant changes had been made. Four groups were arranged covering :

- Hydrogeology survey
- Training/ training material and capacity building
- GIS/MIS
- Situation in Faryab



Output from group work- for consideration.

Group 1

- Syscal pro software should covered in the training
- Time should be increased for practical work with syscal pro equipment
- Data interpretation should be taught for manual interpretation as well as with the use of appropriate software
- Estimation of ground water resources should be considered in 1.5 course
- Pumping test interpretation should be taught manually and by use of software
- Integrated water quality data management should be handled with AquaChem software to be covered in course 2.1
- Hydrogeo analysis software should be included for water quality and quantity in course 2.2

Group 2:

- Course for preliminary survey should be included in the training
- Time for all courses should be extended
- More people should be trained.

Group 3

- Geophysical should pay attention for theoretical and practical parts
- GIS and MIS should be according to need of hydro geologists
- Training should focus in parallel on national and provincial levels
- GIS maps should be in accordance to the hydro geological investigations
- Water quality should be considered for the hydro geological maps. The maps should indicate where potable water could be found

Technical session part 4 Water supply surveys and design

Dr Stoveland opened the presentation outlining work to be covered under the project by highlighted the key paragraph in the terms of Reference covering water supply surveys in Faryab for rural towns:



Faryab provincial delegation

The following discussion and outline was proposed for making progress by Stoveland:

1. Faryab should propose 3 to 5 prioritized towns for consideration for survey and planning for water supply. Towns should be smaller than 5000 inhabitants and should be in an area where the hydrogeologists are likely to find ground water.
2. Once the proposed areas are forwarded to MRRD/NORPLAN, the hydrogeologists would assess the possibility for selection of the prioritized towns.
3. Norplan and its partner DACAAR would assess security situation.
4. Based on the above, once three towns had been agreed upon, Norplan would meet with the province / governors office to call for a meeting on how to proceed with organizing surveying and planning for the selected towns.

Norplan advise and promise:

Norplan stated clearly that the project had no funds for construction. However Norplan advised by having good plans for three prioritized towns, would increase the likelihood for faster financial support and construction of infrastructure in the surveyed and planned towns.

Stoveland promised that Norplan would do all they could to seek financial support for the three towns surveyed and planned. However, it was in their terms of reference to seek a finance mechanism for the towns.

Before discussing the proposal, Eng. N. Abrar, deputy team leader in Norplan gave a report from the launch workshop in Faryab which was held in early November 2012.

The launch workshop was held at the provincial head quarter with provincial governor with 45 participants from ministries, NGOs and provincial shura.

The project was explained to the participants. The provincial expectations to the project were much higher than the terms of reference outlined for activities for Faryab. This was a difficult issue.

At the end of the workshop it was agreed that Governor would contact the Ministry to learn more about the project. At the end of the workshop the participants agreed to support the project. They were worried that they hope the project would not be like the project in Andhoy which promised a lot and could not deliver or meet expectations for adequate water supply.

Discussions about work in Faryab

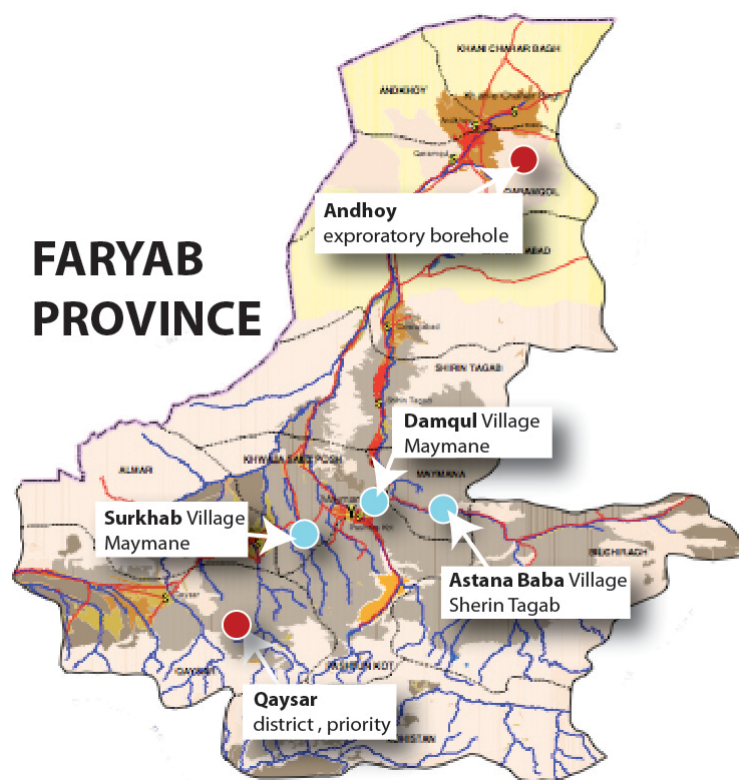
Faryab concern and response:

Size of towns. The representative from the Governors office, Abdul Jalil Awar, stated that the number of people in a village was not necessarily a relevant figure for planning. Stoveland referred to the Terms of Reference where it is indicated that 5000 was the population size which Ministry of Urban Development used for defining urban areas. Stoveland was of the opinion that as long as the village to be surveyed would be adapting rural water supply and sanitation standards in line with national policies, the 5000 population figure would not be so absolute.

Proposed candidate towns: The provincial delegation quickly presented the following candidate towns for considerations:

- Damqul Village (very near Maymana)
- Astana Baba Village (Sherin Tagab)
- Surkhab Village (Pastun Kot)
- Andhoy (always priority area but difficult)

The map shows the prioritised villages of Damqul, Astana Baba and Surkhab. The same villages are shown in google map snapshots below.:



Security: The Province said that they would provide security to travel to all areas. This was much appreciated by Norplan who would do much field work though their partner Dacaaar and MRRD staff. Security issues have to be cleared with them.

Candidate Training for Faryab: It was strongly requested that persons from Faryab province should be sent on longer training so that there would be qualified staff in Faryab who could understand and use the hydrogeological information to be

developed for best possible local use.



Conclusion:

1. Norplan would now proceed to review the proposed villages and The three towns listed would be assessed.
2. Essanullah Bayat from NCA indicated that there could be one possible areas near Andhoy which could have sweet ground water. The hydrogeologist would assess if it would be appropriate to plan for an exploratory borehole there.
3. Communication between Norplan/MRRD and Faryab would have to improve and it was agreed that the project would issue a couple of Ipads for good communication between Kabul and Maymana.
4. The deputy team leader from Norplan would visit Maymane Stoveland proposed to visit Maymane in April to discuss practical planning work for the 3 towns.
5. The Faryab delegation proposed to activate the coordination committee covering water supply and sanitation so that all resource could be better utilized. This could possibly also facilitate that early start of development work in the 3 towns could be started by one of the many NGOs working in Faryab province like Dacaa, Acted, NCA, Intersos or others.
6. It was agreed that Faryab should after consultation with Norplan/MRRD propose a suitable candidate for longer training.

Closing of the workshop.

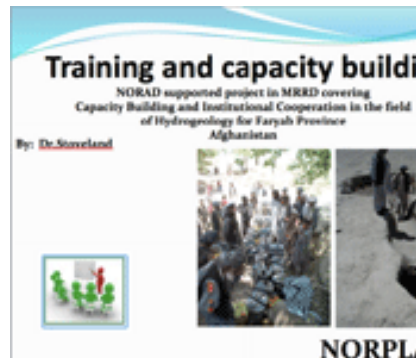
Director Ghulam Qader, closed the workshops and expressed appreciation to all participants for their active contributions though discussion and workgroups to develop a sound and good project. He

stated that he had participated during the first day of the workshop explaining the project. He had also enjoyed listening to the early presentation and wished he had time to be present throughout this interesting and important workshop.

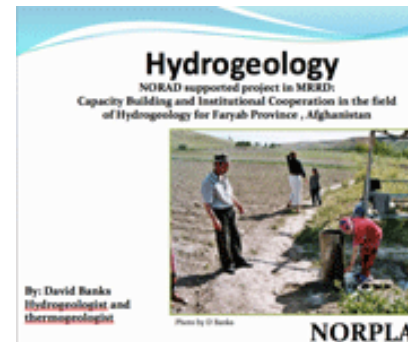
He thanked all for participating and he was also impressed with the good attendance right to the end of the session on the second day.

Thank you all for attending.

Presentation during the workshop. Power point documents are presented in full in http://www.norplan.af/Page_presentations_Worksh_Bridge.html



OVERVIEW OF CAPACITY BUILDING FOR THE PROJECT - DR. STOVELAND



HYDROGEOLOGY CONCEPT AND APPROACH - DAVID BANKS



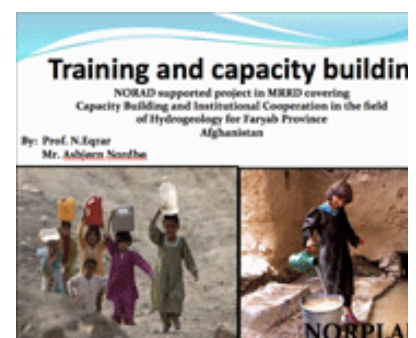
INTRODUCING GIS DEVELOPMENT NAQIBULLAH ABRAR



GIS STATUS AND WAY FORWARD by Prof. S. ZANINKHAIL



UNICEF FOCUS IN AFGHANISTAN IN THE WATER SECTOR BY ADANE BEKELE



TRAINING AND CAPACITY BUILDING- PROF. EQRAR

Course participants:

S.N	Name	Position	Organization	Tel	E- Mail	Day one	Day Two
1	Mohammad Tariq Ismati	Deputy Minister	MRRD		tariq.ismati@mrrd.gov.af		Yes
2	Eng.GhulamQader	Director	RuWatSIP	700250716	Ghulam.qader@mrrd.gov.af	Yes	Yes
3	Zarinkhail	GIS/MIS adviser	NORPLAN	778873240	s-zarinkhail@norplan.af	Yes	Yes
4	Nordbo	Training Manager	NORPLAN	794222559	a-nordbo@norplan.af	Yes	Yes
5	Abdul Monir	GIS/MIS Manager	MAIL	777999950	Abdul.munir@hottmail.com	Yes	Yes
6	David Banks	Hydro geologist	NORPLAN	794222558	david@holymoor.co.uk	Yes	Yes
7	M.Hassan Safi	Hydrogeologist	DACAAR	799363992	hassan@dacaar.org	Yes	Yes
8	Ab.Malik	Water Eng.	PRRD	799592345		Yes	Yes
9	Norullah	Drilling Team L	MRRD	772840558	Noorullah.wardak@yahoo.com	Yes	Yes
10	Lendeert	Wash Adviser	DACAAR	797022028	Lendeert.vijeslaar@dacaar.org	Yes	Yes
11	Moh.Hosain	Hydrogeologist	MoM	799820256	Mohd.hosain@yahoo.com	Yes	Yes
12	Eng.Mirwais	Eng. Manager	PRRD	775420032		Yes	Yes
13	Bashir Ahmad	hydrogeologist	MoM	776642971	bashiramin@yahoo.com	yes	Yes
14	M.A.Hakim	Hydrogeologist	MoM	784134529		Yes	Yes
15	Baryali	Hydrogeologist	MoM	771970602	baryalikra@gmail.com	Yes	Yes
16	Mohammad Reza	Hydrogeologist	MoM	772151359	Reza-hashimi@yahoo.com	Yes	Yes
17	Eng.Abdulhamid	Geo Engineer	MoM	782948761		Yes	Yes
18	Ali Poya	Hydrogeologist	MRRD	773355198	Ewazali.poya1@gmail.com	Yes	Yes
19	Moh.Hussain	Hydrogeologist	MRRD	787334974	Hussain_2024@yahoo.com	Yes	Yes
20	Hsashmatullah	Geo Physicist	MEW	770150510	hashmatullahyar@yahoo.com	Yes	Yes
21	SaifRahman	Soil peadologist	MEW	773023240	saifrahmanmayar@gmail.com	Yes	Yes
22	Dr.A.Khabir	Water expert		772030596	akhabiralim@gmail.com		Yes
23	Ramanzan	Geophysist	MRRD	796870689		Yes	Yes
24	Abdul Ahad	W.Q.Manager	MRRD	776951822	Payend.ahad@yahoo.com		Yes
25	Najeebullah	Geophysist	MEW	776354470		Yes	Yes
26	Noorullah	Geophysist	MEW	799406900		Yes	Yes
27	Abdul JalilAwar	Provincial Adviseir	Faryab	799272337		Yes	Yes
28	Eng.AlimMeraf	Director	PRRD Faryab	799187965	Engalim.mt@gmail.com	yes	yes
29	Dr.Shir	Deputy	DACAAR	797011025	shirahamad@daca		Yes

29	Dr.Shir Ahmad	Deputy manager	DACAAR	797011025	shirahamad@dacaar.org		Yes
30	Eng.JalilAnwary	Hydrogeologist	MRRD	707581689	Jalil.anwary@yahoo.com	Yes	Yes
31	EhsanullahBayat	Hydrogeologist	NCA	777755262	Ehsanullah.bayat@nca.no	Yes	
32	Dr.NaqibTaib	Hygiene Unit head	MRRD	700073206	Naqib.taib@mrrd.gov.af	Yes	Yes
33	NaimEqrar	Training Coordinator	NORPLAN	700285942	naimeqrar@norplan.af	Yes	Yes
34	Dr.Stoveland	Team Leader	NORPLAN	796982085	Svein.Stoveland@asplanviak.no	Yes	Yes
35	NaqibullahAbrar	Dep.Team Leader	NORPLAN	776782054	n-abrar@norplan.af	Yes	Yes
36	Habibrahman	Office assistant	NORPLAN	794220147	hfayaz@gmail.com	Yes	yes
37	Moh.Osman	Monitor	MRRD	700185170		Yes	yes
38	Abdul Bari	CTO	ARTS	778899200	Abdul.bari@arts.af		yes
39	AdaneBekele	Wash Adviser	UNICEF	790507651	adbekelle@unicef.org	Yes	
40	Fatima	Wash	helvetas	774033658	Fatemah.shams@helvetas.org	yes	