

International Cooperation Project of Friuli Venezia Giulia

Realisation of a Geomatics Laboratory for the Management of Hydrogeologic and Seismic Risks

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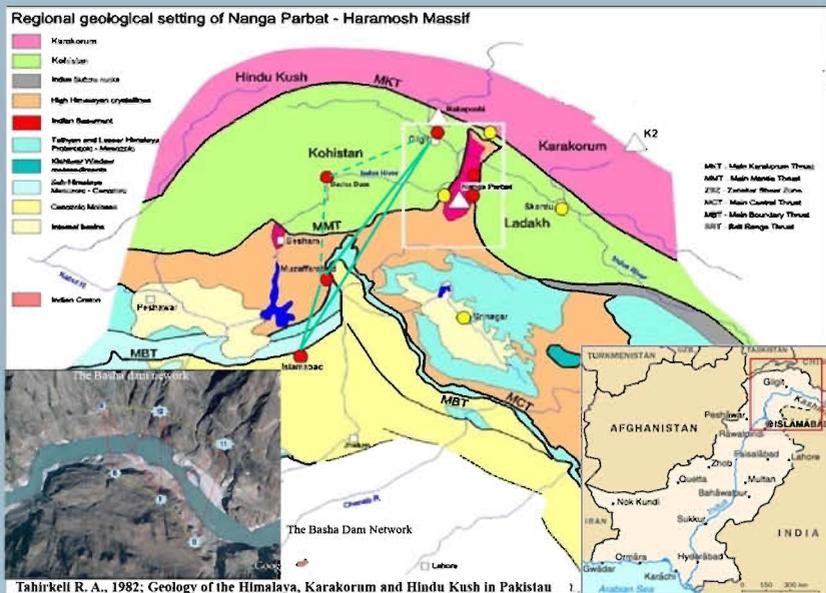
Conference participants in front of the memorial for the 2005 earthquake



The day of the tragedy



On the 5th of October 2005, the Pakistani region of Kashmir suffered a devastating earthquake which caused more than 70,000 deaths and left 4.5 million people homeless by destroying the economic and social fabric of a region on the slopes of the Karakorum, which was enjoying a slow but significant growth in agriculture and craftsmanship. This disaster involved also the University of Azad Jammu and Kashmir (AJKU) located in Muzaffarabad, near the epicenter of the quake, with a loss of 112 students and 10 teachers and an unknown number of wounded. A large part of the casualties was due to the poor antiseismic building techniques and to the landslides produced by the tectonic movement.



Tahirikelli R. A., 1982; Geology of the Himalaya, Karakorum and Hindu Kush in Pakistan

The cooperation project was based on a three-year programme that brought to Trieste every year four researchers from Kashmir and provided courses on GIS and seismic risk awareness. Their presence was an opportunity for providing the geologists with the necessary information for the norms to be followed in building at different distances from the epicenter and in the construction of a dam in an earthquake area. They visited the Vajont dam.

Within this project a new GNSS permanent station was started at the AJKU and inserted into the GPS network of the Karakorum, carried out within a project of the Ministry of Foreign Affairs in 2010. In August 2013 the first measurements were made calculating the distances between: Islamabad – Muzaffarabad, Muzaffarabad – Gilgit, Islamabad – Gilgit

The measurement of the GPS baselines to the Basha Dam network will be performed in Spring 2014.

Remembering that it had suffered a similar experience in 1976 the Friuli Venezia Giulia Region approved a programme of support for the realisation of a Geomatics Lab at the AJK University. This was performed through the University of Trieste that transferred the expertise acquired by the FVG Region during the period of reconstruction. Particular interest was focused on the study of landslides.



GPS training at the University of Trieste

The GPS antenna in front of the Geomatics Centre at AJKU

- Geomatics Centre Equipment:
Within the framework of this project the AJK University was provided with:
- 6 desktop computers,
 - 6 portable computers,
 - 2 printers,
 - 1 A3 scanner
 - 1 plotter
 - 1 Permanent GNSS station
 - 1 Spider programme licence
 - 1 Leica LGO licence



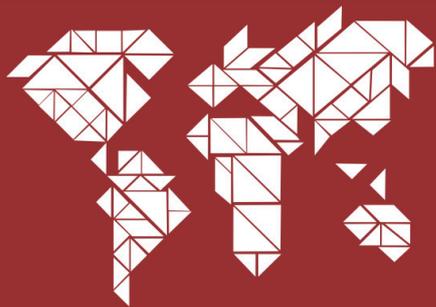
INFORMEST



The permanent GPS station at the Basha University



Visit to the Vajont dam



Immaginare culture della cooperazione: le Università in rete per le nuove sfide dello sviluppo

III Congresso scientifico CUCS
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SOLID WASTE MANAGEMENT IN ARMED CONFLICTS AND UNSTABLE CONDITIONS: A CASE STUDY FROM THE GAZA STRIP

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Abstract

Solid waste management (SWM) is one of the most challenging topics in low- and middle-income countries. Municipalities are usually not able to provide an acceptable level of collection and disposal service, despite great economical and financial efforts, with social, political, health and environmental impacts. Several actors are interested in SWM, with a different level of involvement according to needs, resources and objectives: they can be either officially recognised (e.g. NGOs, CBOs, private companies) or informal individuals/groups (e.g. scavengers, collectors, traders), interacting each other in dynamic conditions. Thus a SWM system looks particularly complex, and any intervention could affect not only the environment, but also society and public health: technicians have to identify appropriate solutions, considering not only technical aspect, but also social, economical, environmental and institutional ones, evaluating impacts at short and middle-long period. When conditions are unstable, for example in case of armed conflicts, not all the aspects can be clearly evaluated, due to lack of data, unexpected political changes, and security constraints. Donors and international NGOs have a humanitarian approach, with short term projects: sustainability is clearly not a priority, and some particularly complex sectors, like SWM, are usually not considered. In the Gaza Strip SWM is a hot topic, due to high population density, with consequent large waste generation, scarcity of land availability for disposal, few recycling opportunities, and equipment poor conditions. CeTamb has analysed the situation in order to identify appropriate solutions, robust to local instability, and supported COOPI, an Italian NGO, to design effective and sustainable humanitarian interventions. Such solutions concern the management of municipal solid waste and health-care waste, and have partially been applied. CeTamb have evaluated the impact on local conditions and sustainability.

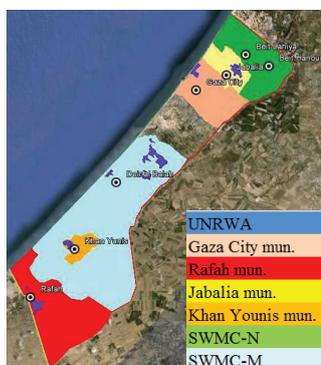
Objectives

- To assess solid waste management system in the Gaza Strip
- To identify main needs and challenges
- To suggest possible humanitarian responses

Achieved Results



Land and maritime no-go zone in Gaza Strip
(United Nations OCHA, 2011. *Easing the Blockade*).



MSW coverage by main service providers
(authors' elaboration).

Year	Household (ton/day)	Commercial (ton/day)	Market (ton/day)	TOT MSW (ton/day)	Composting rate	MSW to landfill (m ³ /year)	Agricultural (ton/day)
2007	1,306	68	72	1,446	1%	435,336	1,200
2011	1,506	78	83	1,667	1%	501,825	1,200
2012	1,552	80	85	1,718	1%	517,303	1,200
2015	1,711	88	94	1,893	2%	564,272	1,200
2020	2,019	102	109	2,230	6%	637,709	1,200
2030	2,874	128	137	3,139	15%	811,511	1,200
2040							

Methodological approach

- Literature review
- Field missions: document collections, field visits, meetings and interviews
- Each service provider was analysed in details (e.g. scheme of collection, equipment, challenges, potentialities, and future plan)
- Data verification and triangulation with COOPI staff, and service providers

Municipality	Governorate	Disposed waste (ton/day)	Disposal Site	Collection rate	Waste generation (ton/day)
Um Al-Nasser	North Gaza	n.a.	Johr al Deek	95%	n.a.
Beit Hanoun*	North Gaza	27	Johr al Deek	95%	29
Beit Lahia*	North Gaza	42	Johr al Deek	95%	44
Jabalya*	North Gaza	119	Johr al Deek	95%	125
El-Zahra*	Gaza City	3	Johr al Deek	95%	3
Al-Moghraqa*	Gaza City	3	Johr al Deek	95%	3
Gaza City*	Gaza City	535	Johr al Deek	95%	564
Wadi Gaza	Gaza City	n.a.	Johr al Deek	95%	n.a.
Al-Breej**	Middle Area	10	Deir al Balah	90%	11
El-Zawaid**	Middle Area	10	Deir al Balah	90%	11
Al-Musadar**	Middle Area	1	Deir al Balah	90%	1
Al-Maghazi**	Middle Area	9	Deir al Balah	90%	10
Al-Nusirat**	Middle Area	29	Deir al Balah	90%	32
Deer Al-Balah**	Middle Area	47	Deir al Balah	90%	52
Wadi El-Salqa**	Middle Area	1	Deir al Balah	90%	2
Al-Fokhari	Khan Younis	n.a.	Sofa	80%	n.a.
El-Qarara**	Khan Younis	12	Deir al Balah	80%	16
Bane Sehela**	Khan Younis	17	Deir al Balah	80%	22
Khan Younis**	Khan Younis	93	Deir al Balah	80%	116
Khuza'a**	Khan Younis	7	Deir al Balah	80%	8
Abasan Al-Jadedah**	Khan Younis	5	Deir al Balah	80%	6
Abasan Al-Kabera**	Khan Younis	13	Deir al Balah	80%	17
Al-Shoka	Rafah	n.a.	Sofa	70%	n.a.
Al-Nasser	Rafah	n.a.	Sofa	70%	n.a.
Rafah***	Rafah	100	Sofa	70%	143
2 camps*	UNRWA North	50	Johr al Deek	100%	50
5 camps**	UNRWA Middle	97	Deir al Balah	100%	97
1 camp***	UNRWA South	30	Sofa	100%	30
TOTAL	Disposal	1,261	ton/day	Generation	1,391

* source: municipality of Gaza, Johr al Deek landfill registry for September 2011.

** source: Financial Statements and Independent Auditor's Report for the Year Ended December 31, 2010 - SWMC Deir al Balah-Palestine.

*** source: interview with municipality of Rafah, Environment and Health Department.

Conclusion

- Industrial and healthcare waste are collected with MSW; **MSW production is expected to largely increase in few years**. Recycling is very limited.
- **MSW management system is overloaded**, with scarce, old, and poorly maintained equipment. However **almost all the waste is collected and landfilled**.
- **Several actions are required**: a more efficient waste and fee collection, **directly involving population in planning phase**; schools and commercial areas should start **separating waste**; new **technologies for material recovery** should be introduced, in particular anaerobic digestion for organic.
- Need of **future research**: **specific waste production and management** (healthcare, commercial); **service providers' operation**; **informal sector**.
- Cooperation with COOPI is still on-going, in particular about **healthcare waste management**.

EUROPEAN COMMISSION



Humanitarian Aid

All COOPI staff is thanked for the opportunity to cooperate about MSW, and the precious support during all the study phases. DG ECHO is thanked as well as to have accepted to include MSW and HCW assessment in Gaza Strip in the project "Support to vulnerable households affected by limited livelihood opportunities in West Bank and Gaza Strip, Occupied Palestinian Territories".



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INTERNAZIONALE