LAND MINE IMPACT SURVEY AND MINE VICTIMS
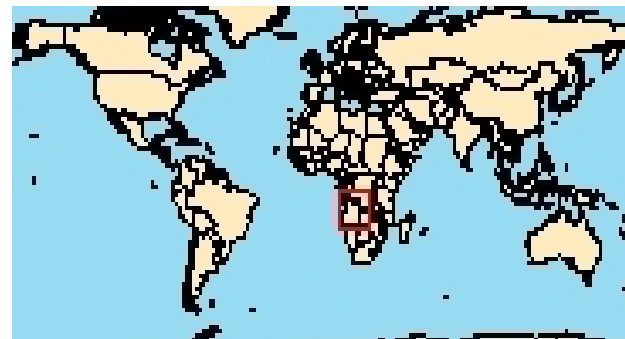# CNIDAH - ANGOLA

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OVERVIEW AND LOCATION

- Country: Repblic of Angola

- Capital: Luanda Africa west cost

- Provinces: 18

- Population: approx. 15 Million.

- Superficies: Sqr km 1,246,700

- Wealth: Oil, Diamond,

- Independent from Portuguese colony Nov. 11, 1975

- Agostinho Neto First president of the nation (Passed away 1989)

- Jose Eduardo dos Santos, actual president

- 27 years of civil war 1975 – 2002 amongst MPLA, UNITA and FNLA (the later gave up in the decade of seventy)

- External forces: Zairians (DRC), Cubans, South Africans, Namibians

- Mine laid: more than 4 Million

- Landmine victims: more than 70,000

- Big constraints for the development of the country

Inter Sectorial National Committee for De mining and Humanitarian Assistance CNIDAH

- This committee has been the Mine Action Center for Angola
- Created under Presidential decrete in 2003
- Responsible for Mine Action Coordination
- Responsible for Quality Control and Quality Assurance for De mining
- Responsible for Mine Action Data Management
- Responsible for Mine Victim Assistance
- Responsible for Mine Awareness
- Responsible for Advocacy

Changes of scenario

- The Ottawa Convention in 1997 led to:
  - Banning of personal land dead mine such as:
    - Manufacturing
    - Utilization
    - Transportation

  - Free circulation and movement of people

  - Meet and be able to respond the mine victims needs

  - Economic, health and Social development to occur without any landmine constraints

Should countries authorities clean the sites from landmines?

- ## Yes, but constraints !!!

- How to control and by pass the following constraints?

  - Scale of mine problem
  - Time
  - Money
  - Human resources (expertise / national capacity building)
 - Policy

Measures

- → An **effective** information management improves the capabilities of decision making processes, resulting in:

  - **Precise overview** on scope of mine problem
  - **Structured** and **prioritized planning** and **implementation**
  - **Efficient allocation of resources** (who?, where?, when?
  - **Reduction of Accident and Victims/casualties**

# How to have an **effective** Information management**?**
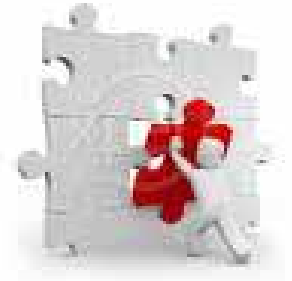
- **Characteristics** of an **effective** information management

  - **Personnel**
    - Business knowledge
    - IT skills

  - Existence of well defined **Standards and Procedures**

  - **Flow of Data**
    - Spatial references (structure, maps, imagery products)
    - Mine action (hazards, mine action processes, accidents)
  - **IT (Hard/Software)**
    - Infrastructure
    - Information management systems
   - **Geography Information System**

GIS one of the solution into Mine Action

- GIS as potential tools for:
  - Effectiveness of Information Management
  - Implementation of various processes in Mine Action.
  - Spatial data analyses and making decision

- GIS support processes such as
  - Landmine Impact Survey
  - Technical Survey
    - Progress Reports
  - Clearance
  - Completion Report
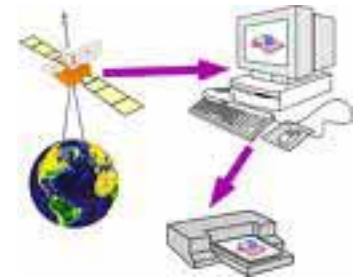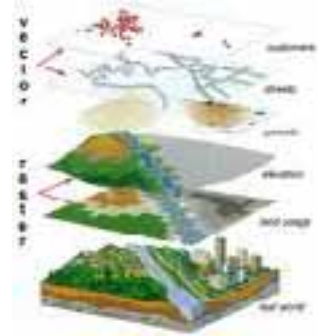
Schema of the process as a chain
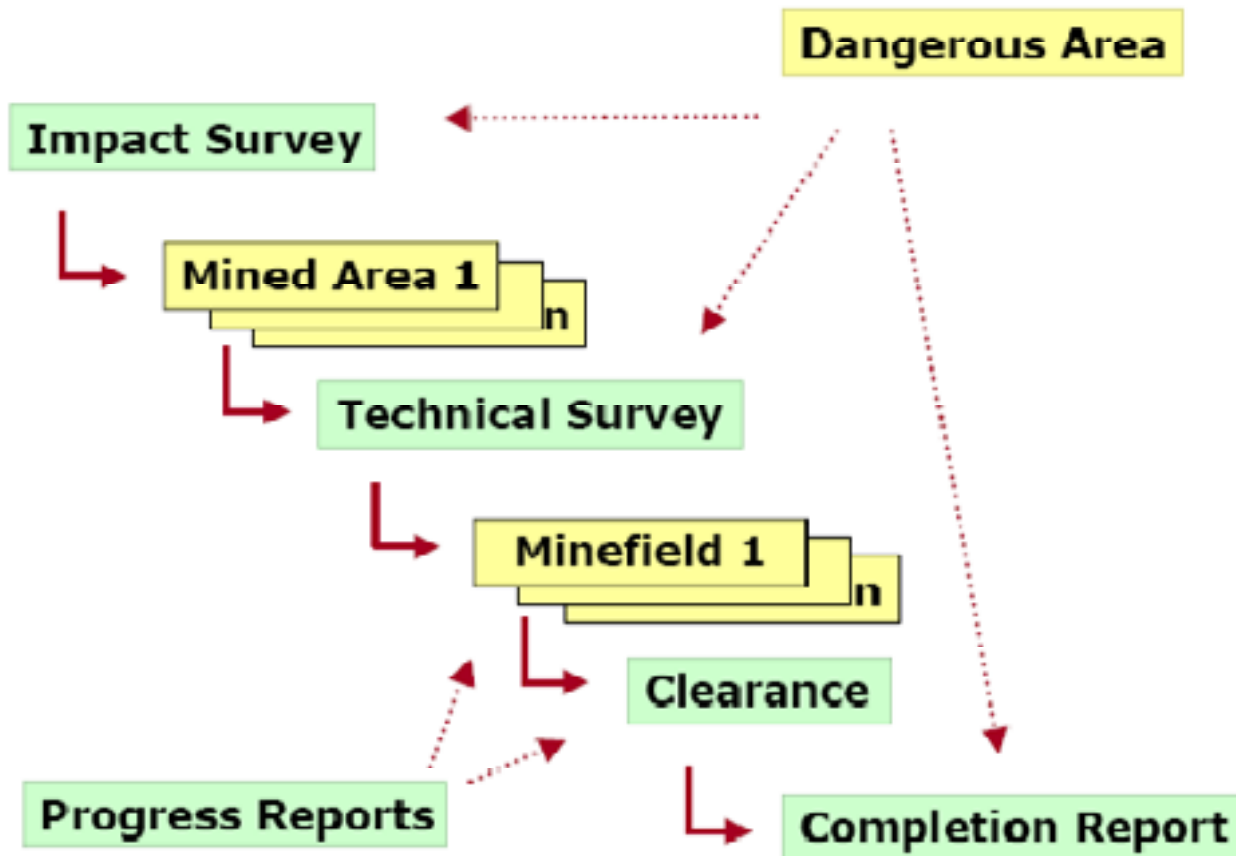
Chain shown geographically

Landmine Impact Survey

- **First process in Mine Action** (Non technical survey)

    - Preliminary Opinion Collection, to identify communities living with mine problem as overall

    - Visits to the communities for interview
        - Acquire Socio-Economic data
        - Measure the impact
        - Register recent mine victims

    - Visits to Suspected Hazard Area of the community
        - Calculate the extent of the area
        - Identify possible mine type or UXO
        - Measure the priority for clearing
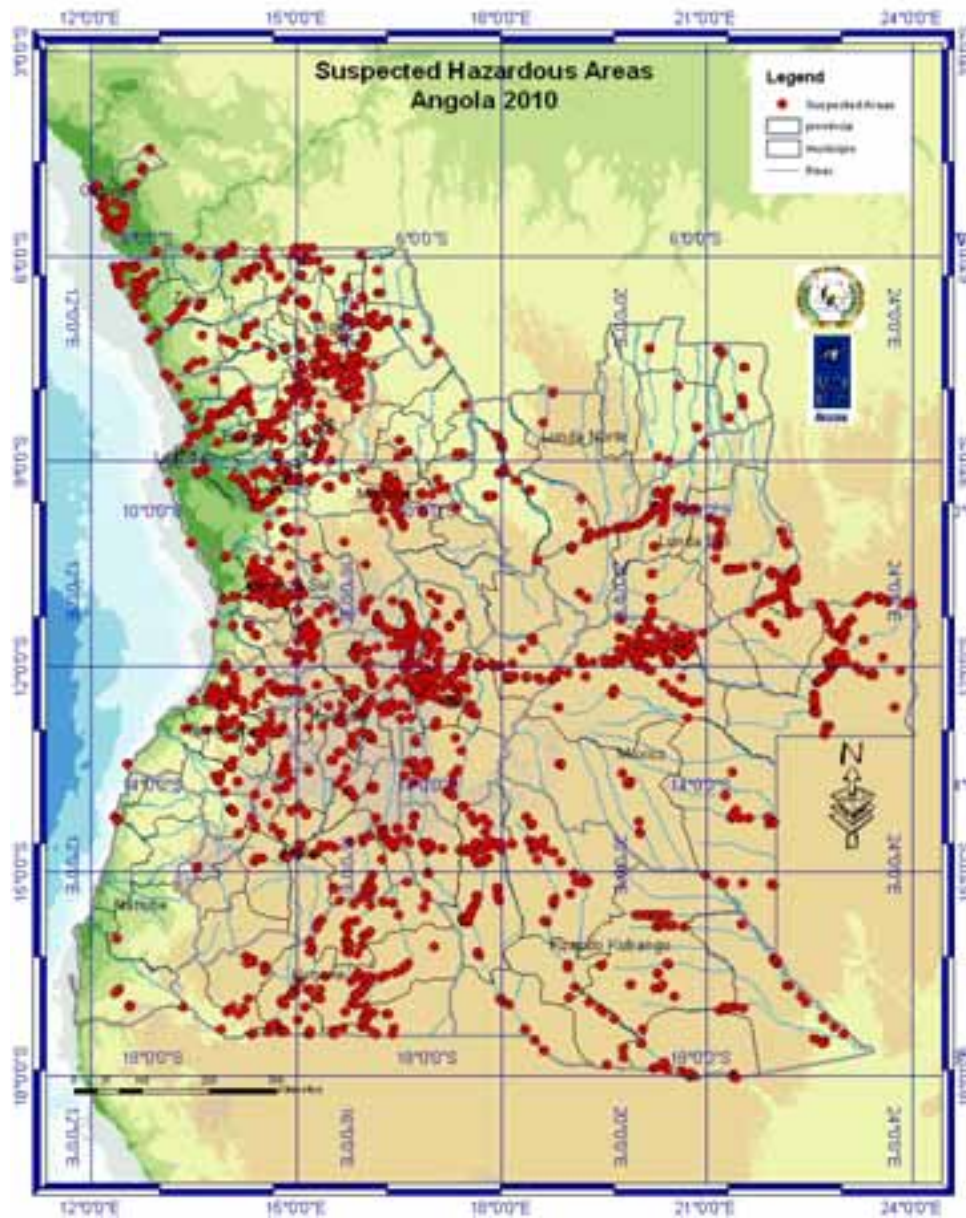   - It gives us the approximate contour of mined area.
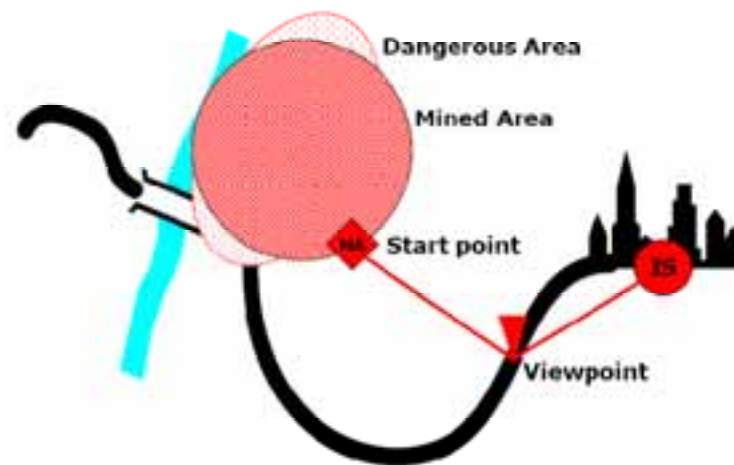
Result from GIS after LIS, on the fly

- Map contamination until 2007
    - Contamination divided into High impact, Medium impact and Low impact levels

    - Work performed by several National and international organization in Mine Action 2004 - 2007

    - Support obtained from various sources

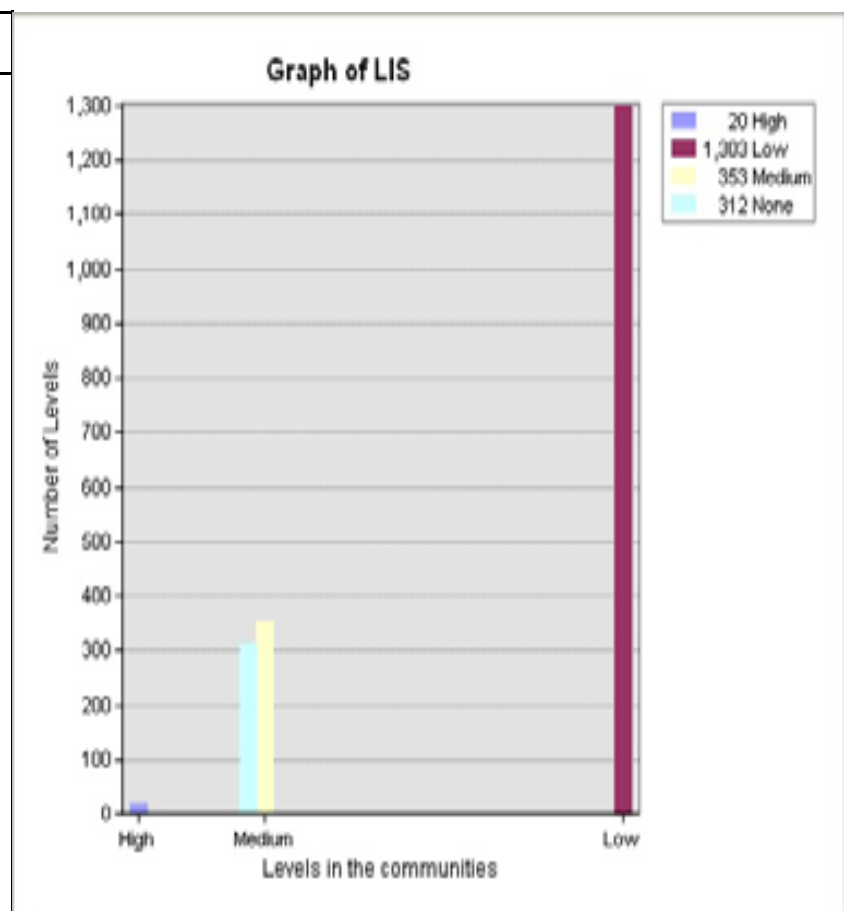   - Two and half years on this process.

Impact Level as per today

Province	High	Low	Medium	None	Total Geral
Bengo		49	13	12	74
Benguela	2	80	10	35	127
Bié		197	43	42	282
Cabinda		27			27
Huambo		65	2	86	153
Huíla	1	60	9	2	72
Kuando Kubango	1	133	27	10	171
Kunene		110	6	10	126
Kwanza Norte	2	40	20	2	64
Kwanza Sul	2	84	28	55	169
Luanda		1	1		2
Lunda Norte	1	22	5	2	30
Lunda Sul	1	42	27	3	73
Malanje	2	39	26	20	87
Moxico	8	158	96	28	290
Namibe		2	1		3
Uíge		142	29	1	172
Zaire		52	10	4	66
Total	**20**	**1303**	**353**	**312**	**1988**

Graph of LIS

- 20 High
- 1,303 Low
- 353 Medium
- 312 None

Number of Levels

Levels in the communities

High   Medium   Low

Technical survey (Area reduction)

- **Second process in mine action**
  - Area reduction or Technical Survey
    - Process involving skilled people
    - Real delimitation of planted landmine to be drawn
    - Type and possible number of mine to be identified
    - A GIS tools such as cutting polygon or similarly in Analysis tools, using intersection in different delimitation layers resolves the issues by getting the reduced area.
   - the reduced area gives back the real contour of suspected area
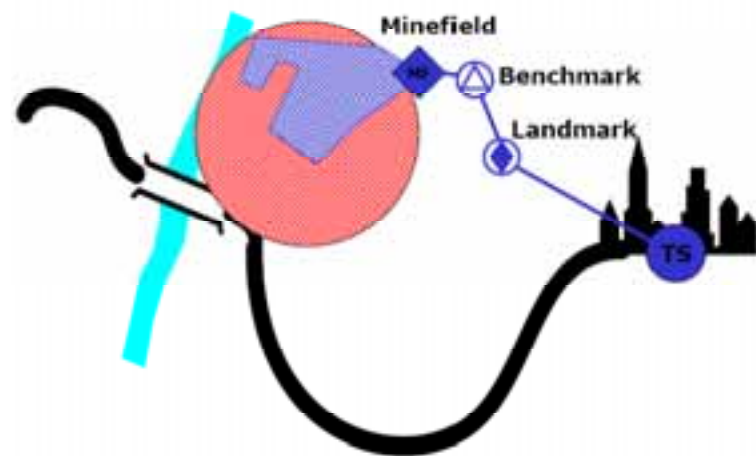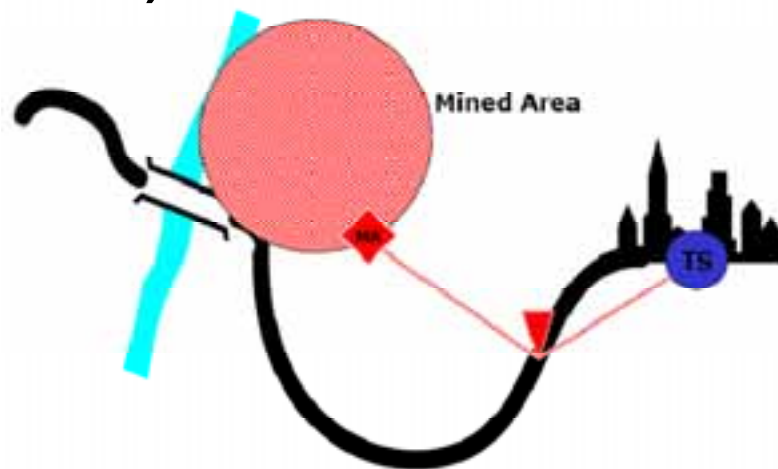
clearance

- GIS Has performed huge roll to get all the elements together
- Analysis tools in Data management has been too important to drive problems into solutions.
- Clearing mines in well identified location has been proved to be a safe clearance
- This is the process in which the land is turned up to be mine free
- From Technical Survey with true identified contour acquired from GIS functionalities, tends to support all the clearance process
- This is the process in which several tasks known as progress is conducted
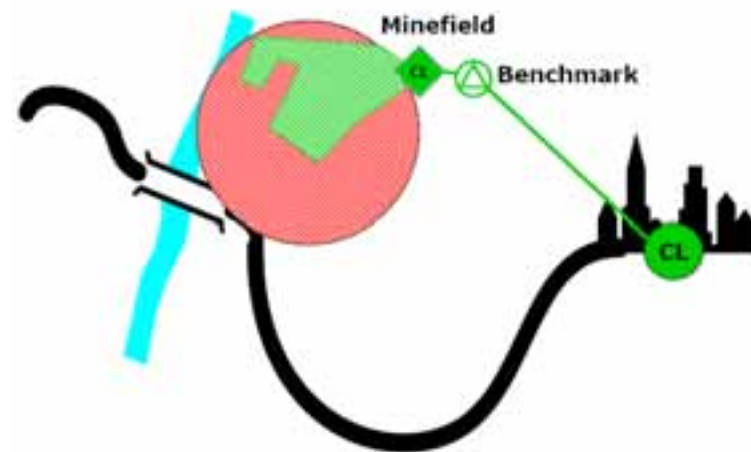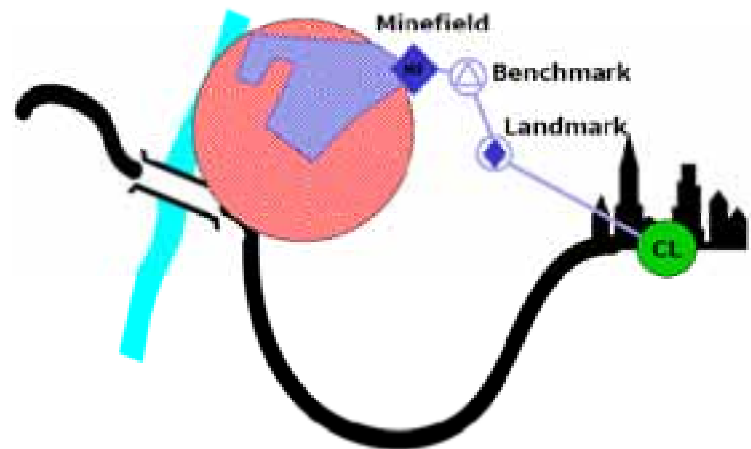
Results of mine clearance from the LIS data changes of SHA to clean areas
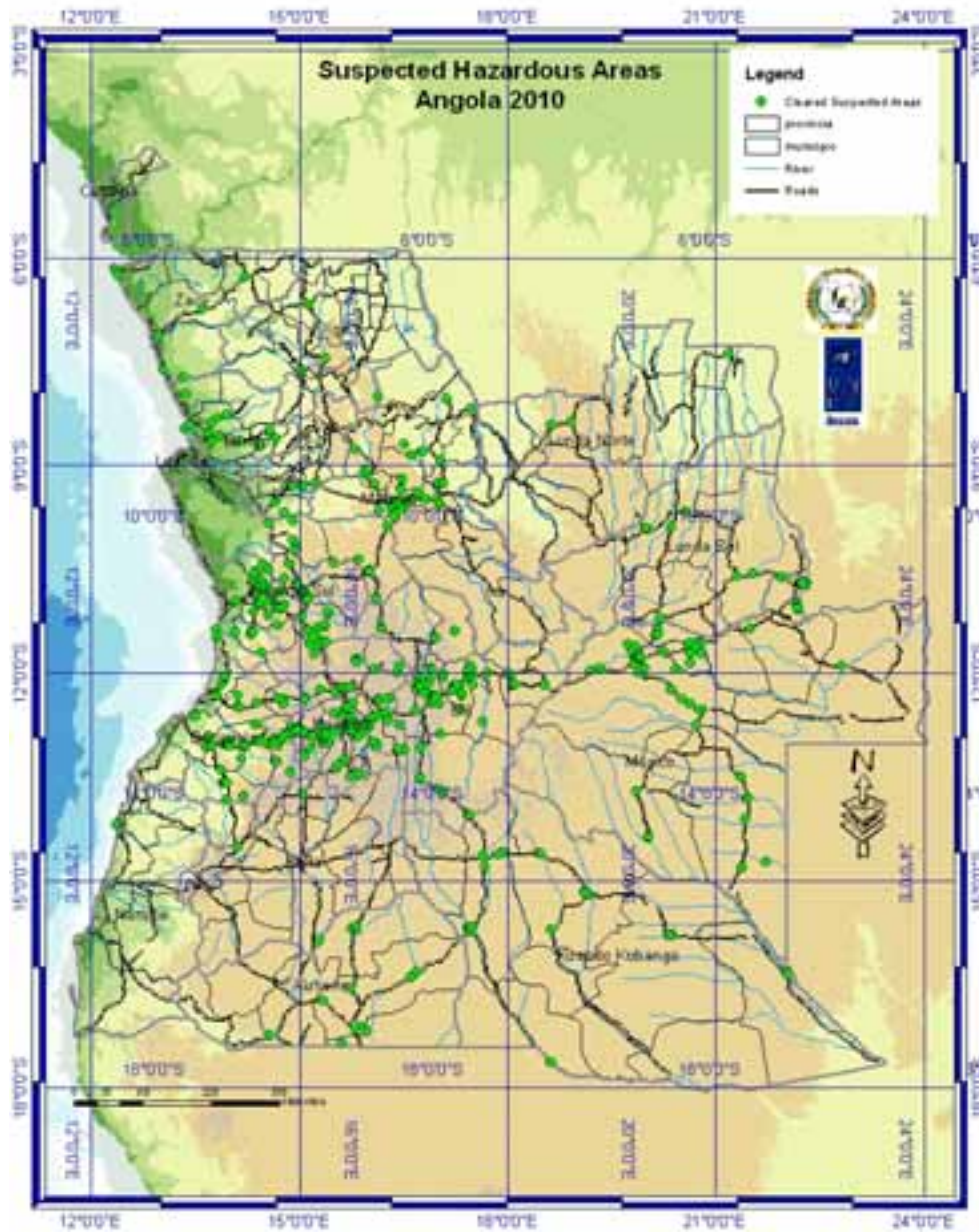
Completion Report

- The last stage and last process where results are presented.

- Again GIS by using symbology with unique values, from layer property one can identify locations with mine free

- Although other requirements such as Quality Assurance and Quality Control (QA QC), are needed to definitely hand over the cleared area to the targeted people, this phase ends the process.

Minefield

Cleared Minefield
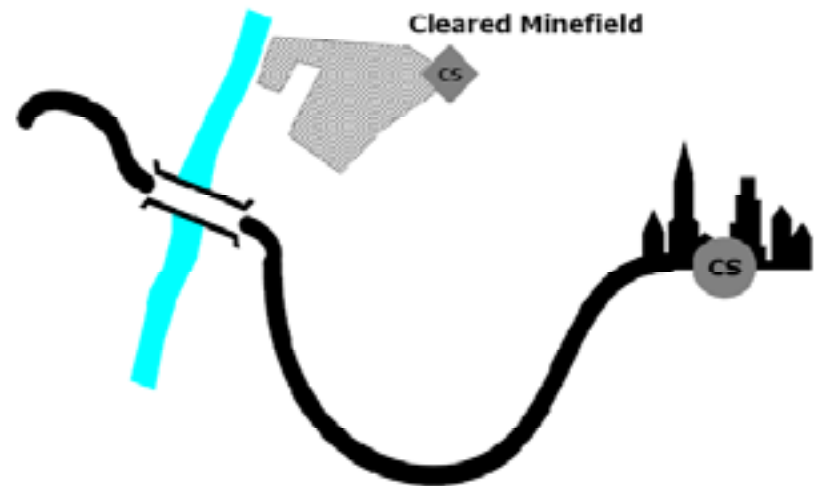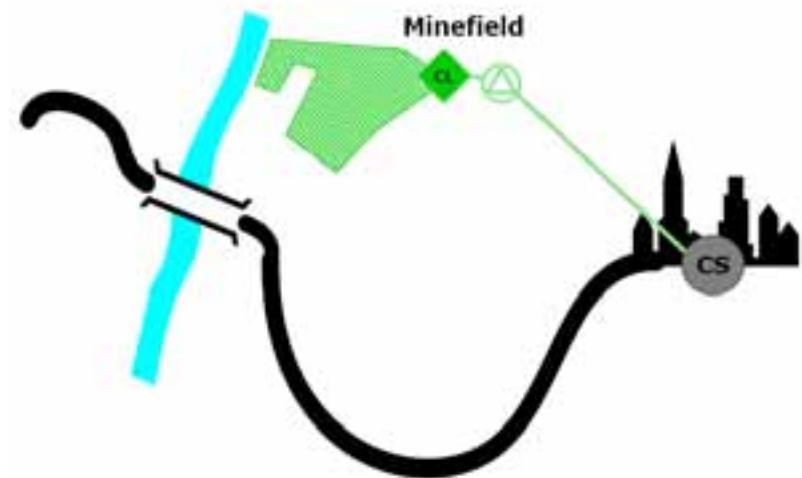
Progress on clearance 2004 - 2010

Provinces	Active suspected area	Clean	Ongoing	Empty field	Total Geral
Bengo	98	18			116
Benguela	121	68	1		190
Bié	341	96	6		443
Cabinda	37				37
Huambo	72	133	1		206
Huíla	106	2			108
Kuando Kubango	286	31	8		325
Kunene	147	13			160

Provinces	Active suspected area	Clean	Ongoing	Empty field	Total Geral
Kwanza Norte	117	8			125
Kwanza Sul	158	109	2		269
Luanda	2				2
Lunda Norte	41	4			45
Lunda Sul	139	12			151
Malanje	104	54	6		164
Moxico	447	73	1	1	522
Namibe	10	1			11
Uíge	310	3			313
Zaire	99	6	1		106
Total Geral	**2635**	**631**	**26**	**1**	**3293**

Graph of Suspected Areas

SHA
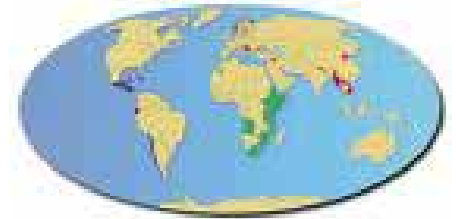- 0
- 2,635 Active
- 631 Expired
- 26 Transitional
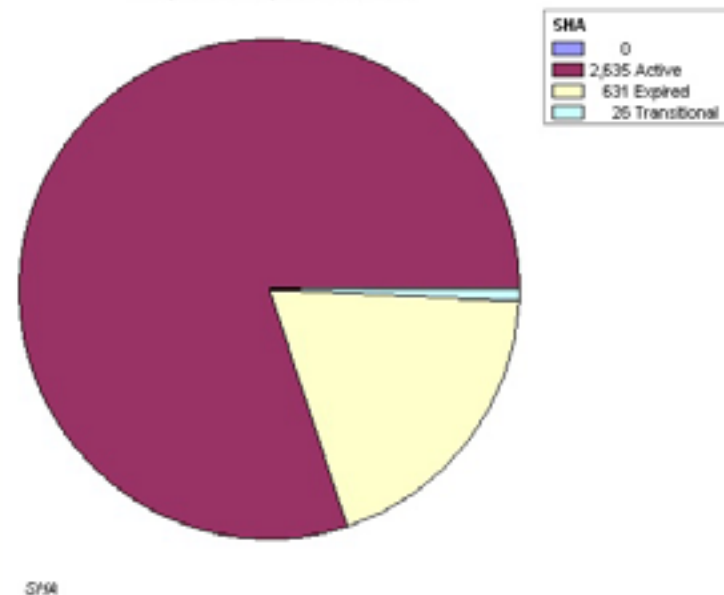
SHA

Mine Victims in Angola

- Mines underground do not recognize who is the owner

- Myself, You and any body else can be a landmine victim

- Good number of soldiers and civilians are landmine victims

- Civilians are most affected by mines

- Among civilians, women and children most dye by mines casualties

- Causes of most of the mine casualties in Angola
  - Agriculture
    - Some mines were put in the farm to discourage people or military trying to collect food
  - Search of food and wood for cooking
    - Lake of food in the villages took people to go far in the jungle for search
  - Search of water
    - Lake of water distribution system in the villages, people move to the rivers
    - River bank were preferred places to lay mines
  - Travelling in unknown path or road bank
    - In certain places side of the roads were most mined
    - Small path leading to the rivers, villages or military strategic positions were mined
  - Playing with unknown objects (Children)
    - Lake of toys made children to use unknown stuff as toys, in many cases they were anti personal mines or UXO

- GIS techniques

  - From the Property of layer
    - In the symbology by choosing quantitative option and the Quantile classification, one is able to determine different casualties groups such as
      - Sex
      - Age group
      - Occupation

  - Labeling of casualties spots made it easier to determine the level of impact in a particular location.

Distribution of Mine Victims as per today

Distribution of Mine Victims
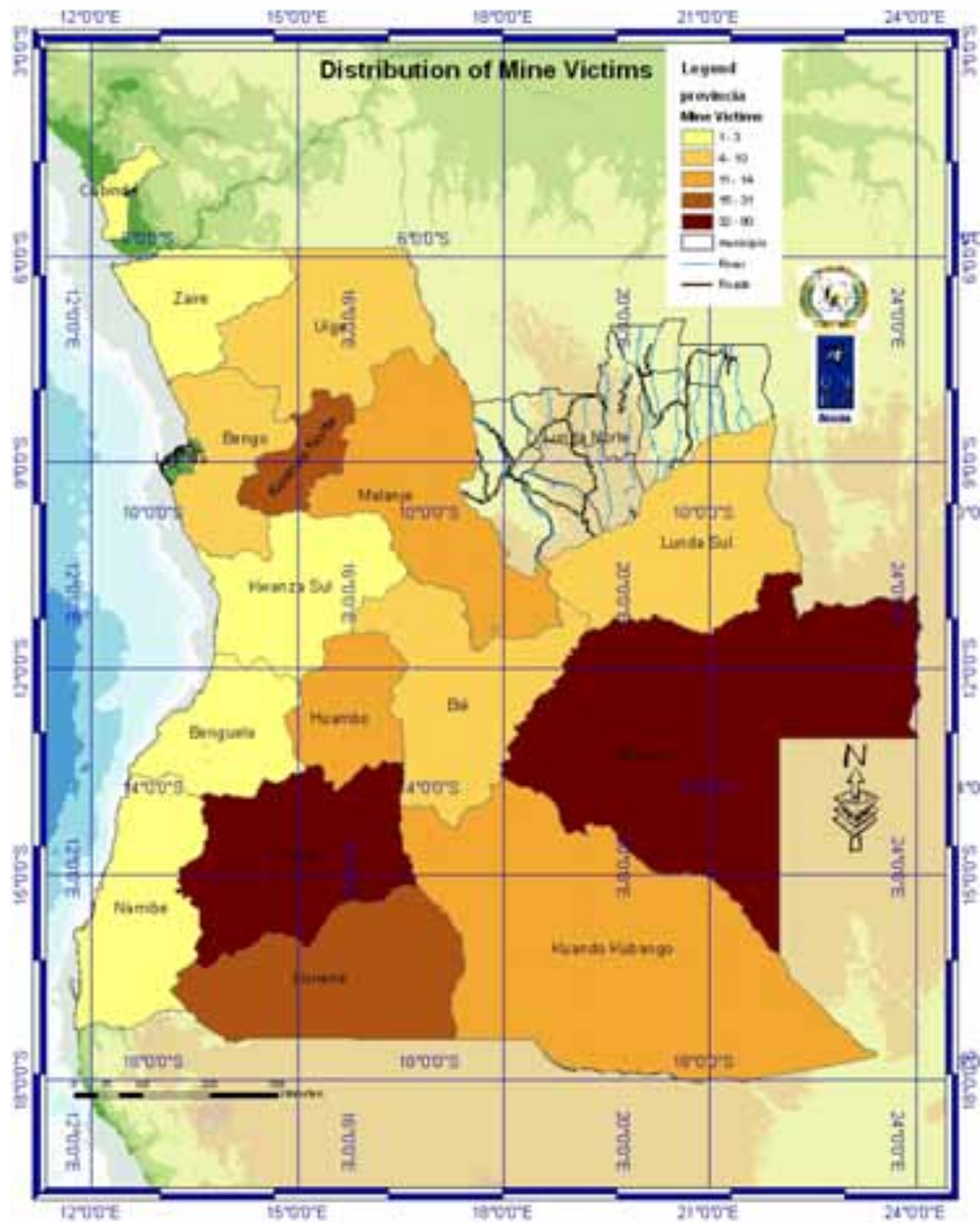
Provinces	Injured	Killed	Total Geral
Bengo	7	2	9
Benguela	2	1	3
Bié	9	1	10
Cabinda	2		2
Huambo	13		13
Huíla	45	8	53
Kuando Kubango	12		12
Kunene	24	7	31
Kwanza Norte	17	10	27
Kwanza Sul	2		2
Lunda Sul	6	3	9
Malanje	12	2	14
Moxico	56	24	80
Namibe	1		1
Uíge	9		9
Zaire	2		2
Total Geral	219	58	277

Thanking you all

Question