

# Lebanese Sterilization Network

## Health Care Waste

***A national public health success story***



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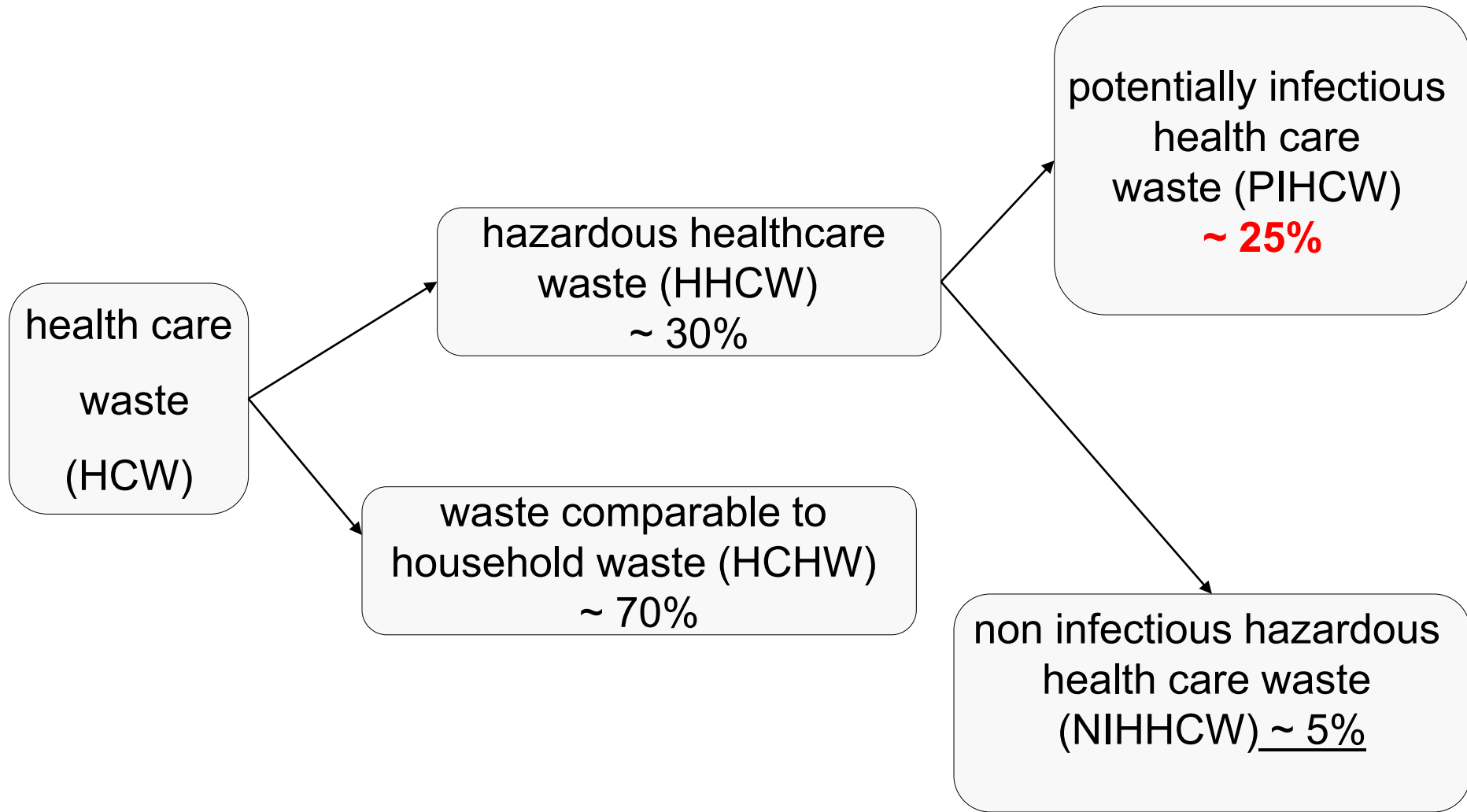
*participate to the development*

# Health Care Waste

“Medical Waste” refers to materials accumulated as a result of patient diagnosis, treatment or immunization of human beings



# Health Care Waste



## Potential health hazards and pollution effects of wastes may be categorized as follows:

1. **Infectious wastes containing micro-organisms** capable of causing illness to a susceptible host. Through this path, AIDS, Hepatitis B, C and D, allergies, gastroenteric infections, respiratory infections, skin infections can be transferred.
2. **Physically injurious wastes** that can produce punctures, cuts, or abrasions.
3. **Flammable liquids and explosive gases** that can cause injury to personnel or damage to the hospital structure by fire and explosion.
4. **Acids or Base** that can cause injury.
5. **Radioactive** contaminated wastes.
6. **Toxic chemicals** that can cause poisoning when inhaled ingested or brought into contact with the skin.
7. **Carcinogens** (cancer-causing agents) in wastes from bio-medical research laboratories.

# Health Care Waste

In Lebanon, until 2003, hospital wastes

- Were not segregated at source within hospital
- Have been disposed with the municipal wastes in landfills.
- Eliminated through non controlled incineration

Medical waste can be considered dangerous if thrown away without any safety measures

# Health Care Waste

Ministry of environment and Ministry of Public Health

Obligated all lebanese hospitals to treat their waste through:

decree 8006/13389

Hospital accreditation

وزارة البيئة

مرسوم رقم ١٣٣٨٩

تعديل المرسوم رقم ٨٠٠٦

تاريخ ٢٠٠٢/٦/١١

تحديد انواع نفايات المؤسسات

الصحية

وكيفية تصريفها



MINISTRY OF PUBLIC HEALTH

**Accreditation**

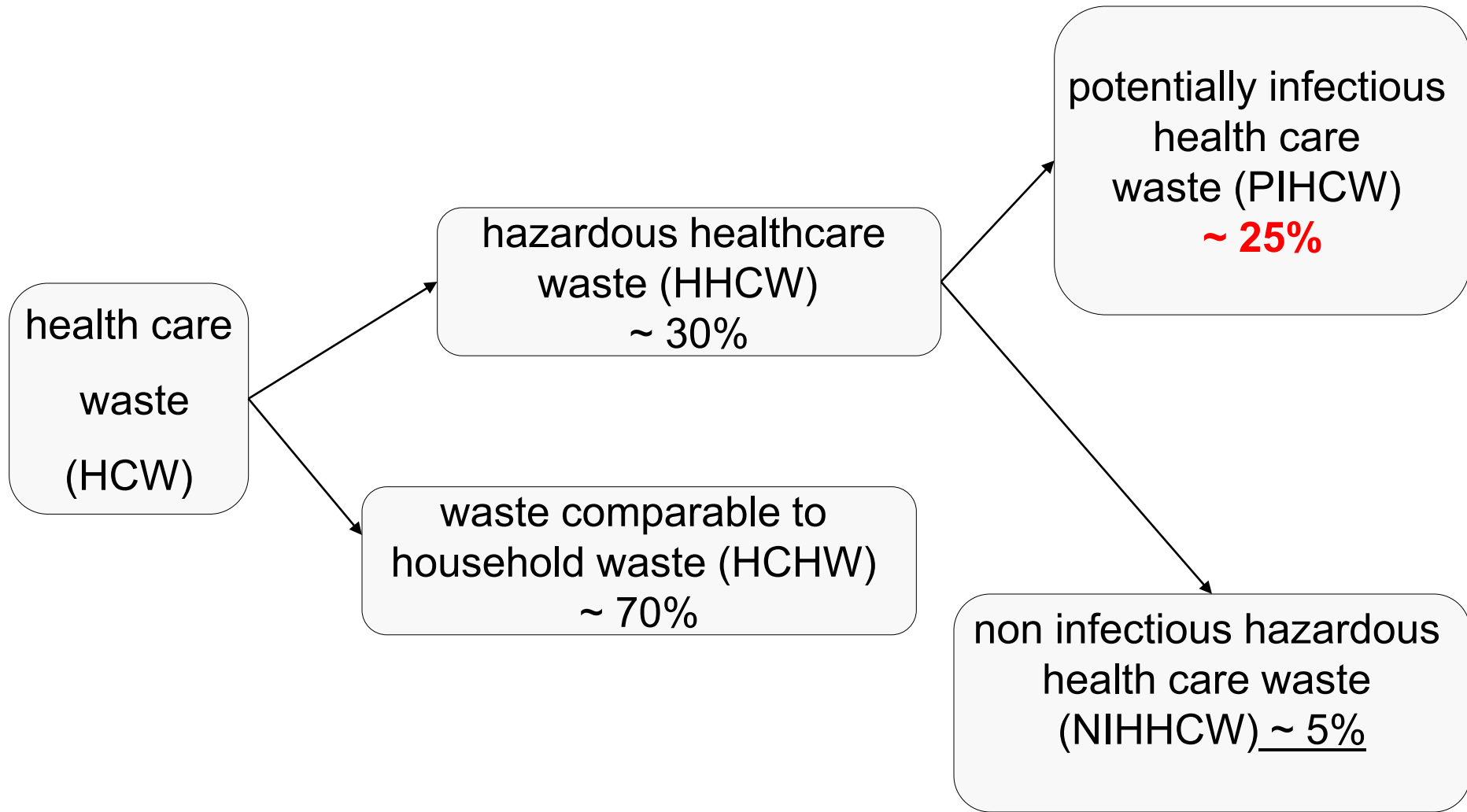
**Standards & Guidelines**

**For Acute Hospitals in Lebanon**

# HCW in Lebanon : case of study

- Independently of any treatment strategy, waste **segregation** must be considered as one of the most important procedures
- Management of HCW must start in Hospitals, than small scale producers should be integrated
- PIHCW must be segregated and treated first .

# Health Care Waste





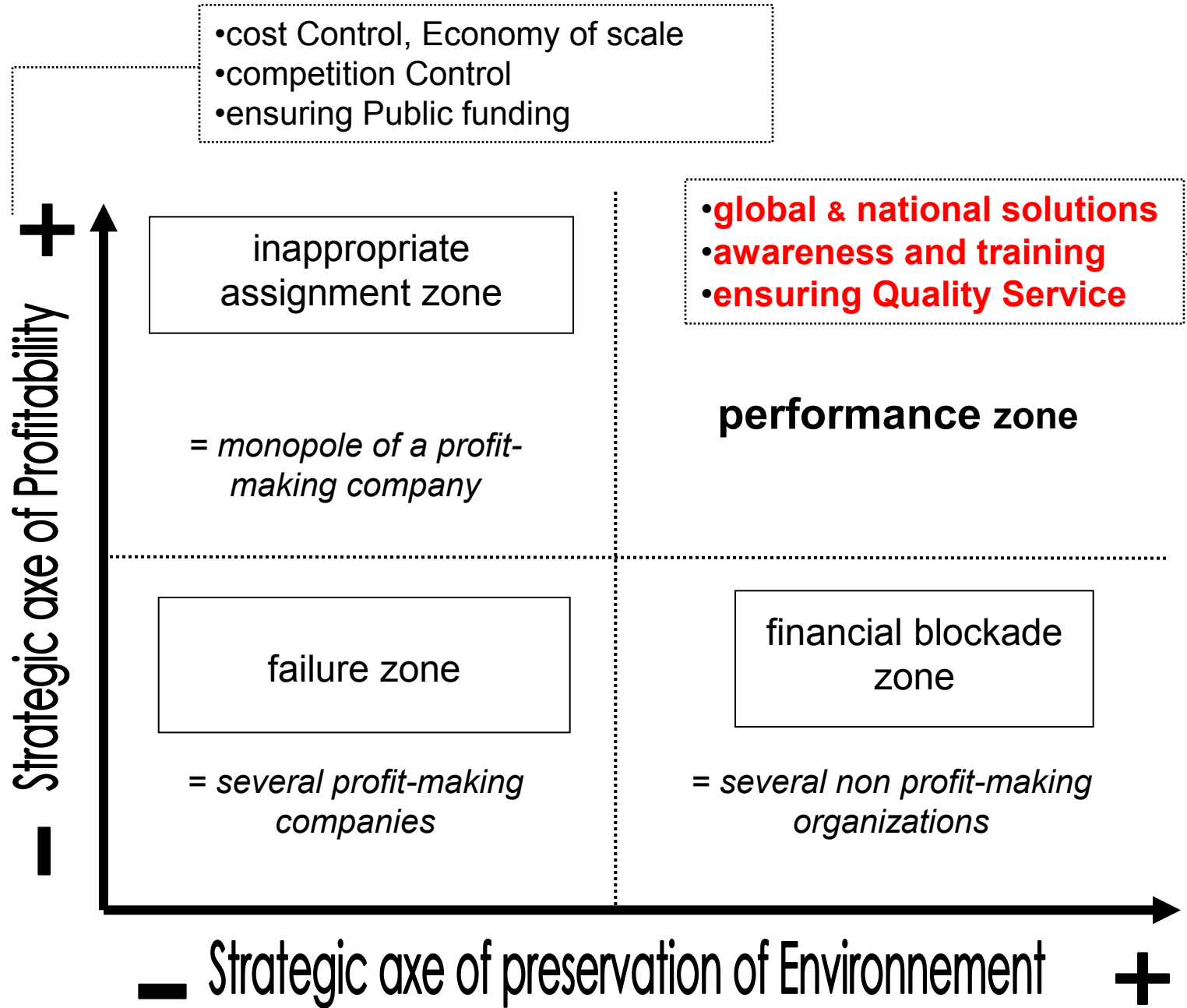
# Many questions should be asked

- Who must be in charge of the PIHCW treatment?
- What technique should be used?
- What is the source of motivation, and what is the cost?
- Who are the real shareholders?

## ***Treatment must be achieved individually by each hospital?***

- The mission of health care institutions is to treat the patient
- Chronically difficult economical situation
- PIHCW production: only 165 hospitals , less than 0.4% of the solid waste
- Difficulty of managing a successful coordination between competing institutions in case of failure
- Profit-making service providers could be too expensive, not interested in reducing waste production

# Management of PIHCW by an NGO



## Treatment technique: Incineration v/s Autoclaving

**Incineration:** can't be considered as an optimal solution in Lebanon because of its major drawbacks:

- Local and international refuse
- Possibility of toxic emissions, such as dioxins and furans
- Expensive controls techniques, high investment and operating costs
- Generation of hazardous ashes containing heavy metals that may pollute the soil and water

## ***Treatment by autoclaving coupled with shredding***

- Environmentally friendly
- Low investment and operating costs
- Proper sterilization in 40 minutes
- Volume reduction of 80%
- Unrecognizable ground waste assimilated to domestic waste



# Methodology for Handling the problem of PIHCW in Lebanon

- A single service provider
- A Non profit organization service provider
- National network with semi centralized centers (5 centers)
- Autoclaving associated to shredding

# Methodology for Handling the problem of PIHCW in Lebanon



# Methodology for Handling the problem of PIHCW in Lebanon

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- a Lebanese non profit organization
- since 1985, with and for every person in difficulty
- recognized of public utility in 1995
- Mission: participate to society's lasting development by supporting fragilized groups and integrating marginalized people.



7 programs

Agriculture

Employment

Environment

Health

Rehabilitation

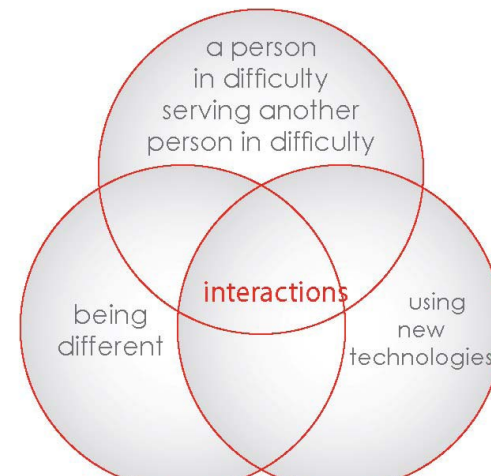
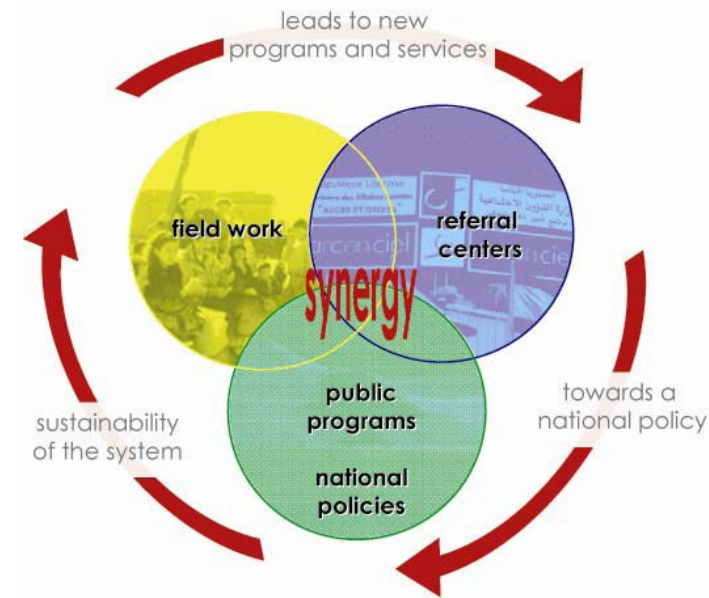
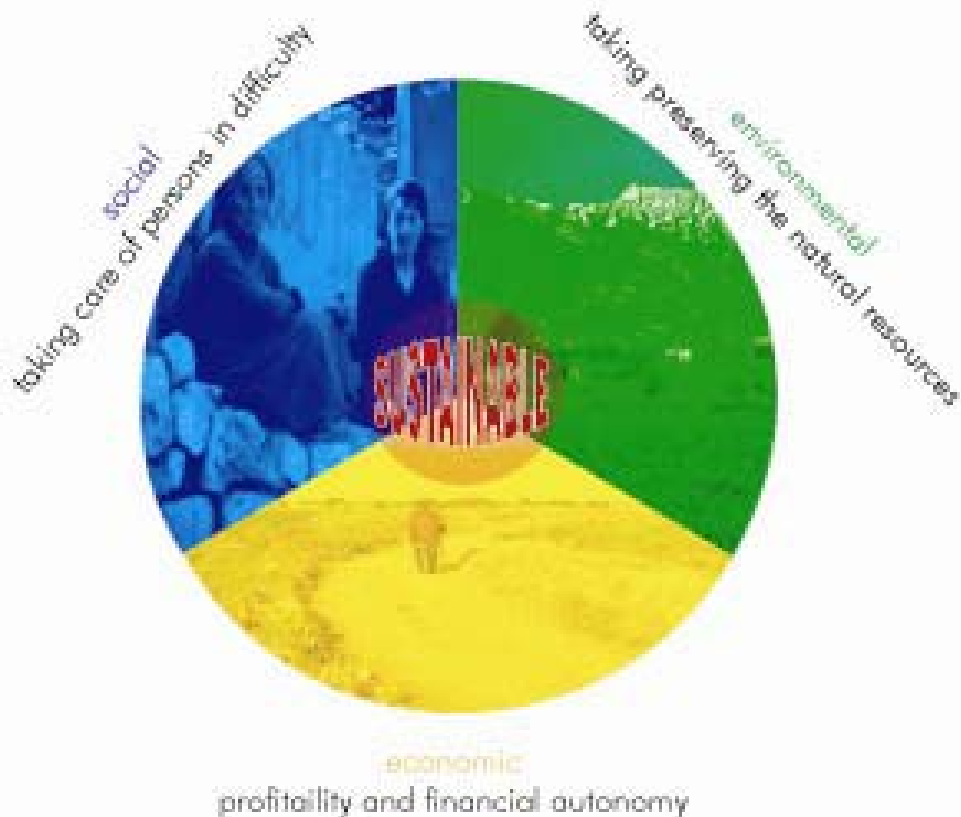
Social

youth



# Methodology for Handling the problem of PIHCW in Lebanon

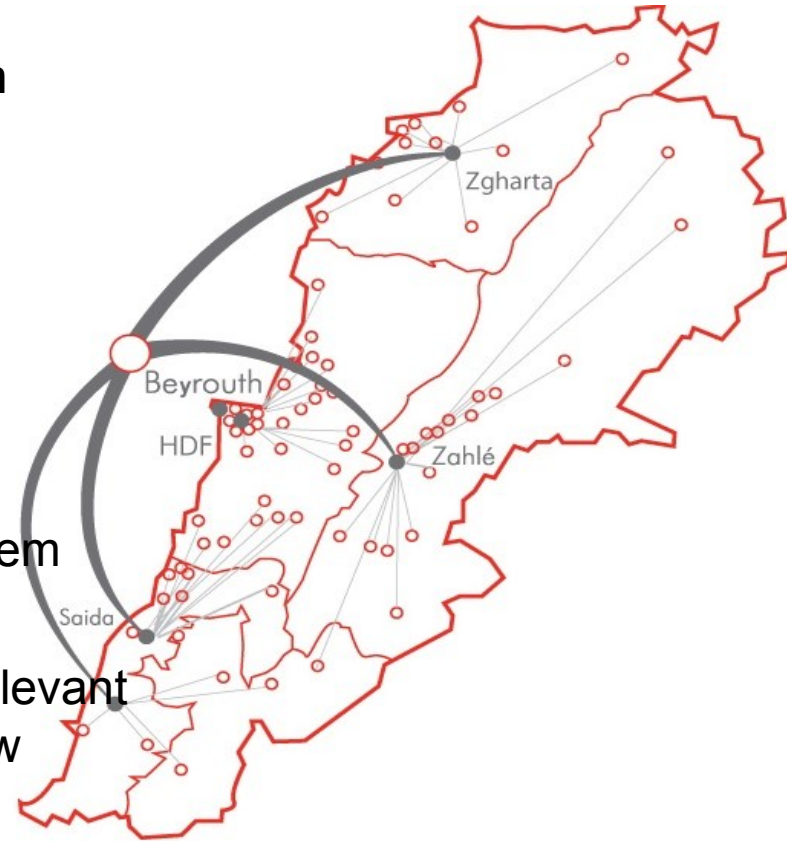
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# **Result 1: A national network strategy, for an integrated and sustainable solution**

## **5 treatment centers : semi centralized dispersion**

- Secures a back up system
- Reduce costs because of economy of scale, experience/efficacy
- Guaranties a quality and reliable traceability system
- Puts all findings and experience to be used by relevant authorities, universities, NGO in order induce new regulations and laws



# Result 1: A national network strategy, for an integrated and sustainable solution

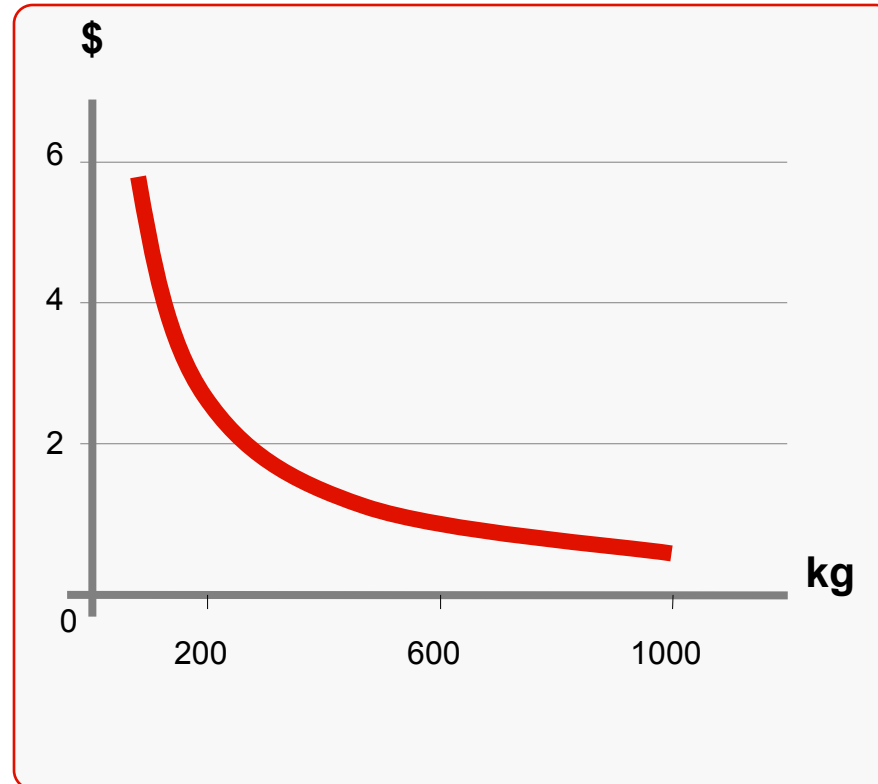
Location	Coverage Region	Funding	Date of Creation	Total number of beds in the region (year 2011)	Beds covered by aec (year 2011)	Percentage of beds aec (year 2011)	Quantities treated (kg/day)
<b>Zahle</b>	Bekaa	autofunds	2003	1574	1176	75%	350
<b>HDF (Beirut)</b>	Hotel Dieu de France	autofunds	2005	342	342	100%	385
<b>Jisr el-Wati</b>	Beirut and Mount Lebanon	EU (LIFE)	2006	4795	3935	82%	3600
<b>Zgharta</b>	North Lebanon	AECID	2007	2847	1805	63%	1000
<b>Saida</b>	South Lebanon	AECID	2009	2200	779	35%	1200
<b>TOTAL</b>				<b>11758</b>	<b>8037</b>	<b>80%</b>	<b>6535</b>

# Result 1: A national network strategy, for an integrated and sustainable solution

## 5 treatment centers : semi centralized dispersion

Reduce costs because of

- economy of scale
- experience efficacy



# Result 1: A national network strategy, for an integrated and sustainable solution





## Result 2 : A controlled collect system

- Specially equipped collection vehicles in compliance to the WHO recommendations
- Trained staff
- Occupational health and safety system
- Bins traceability



### Results 3: Monitoring and traceability

## Treatment monitoring

- cycle reports printed by the autoclave
  - chemical tests
  - biological tests
- N 1076

جدول متابعة

التخصص من انشاقات  
الطبية

No. 1076 رقم

الرمز: عدد المستوصبات المتقبلة وزن المستوصبات المستلمة تاريخ التسليم حجم كل مستوصب ليتر		المؤسسة الصحية الاسم: العنوان: اسم المحول بالإمضاء: الإحداثيات: الهاتف: الساكن:	
الرمز: عدد المستوصبات المتقبلة وزن المستوصبات المتقبلة تاريخ التسليم إلى مركز المعالجة حجم كل مستوصب ليتر		التجمع والنقل الاسم: العنوان: الإحداثيات: الهاتف: الفاكس:	
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## Results 4: Consultancy, awareness and training

### *Training of Health Care Staff: more than 7000 persons trained*

- Special training sessions for health care staff (Drs, nurses, cleaning staff, administrative staff)
- Risk prevention
- Emergency procedures
- **Sorting at the source and PIHCW minimization : National Guidelines**
- Management of NIHHCW

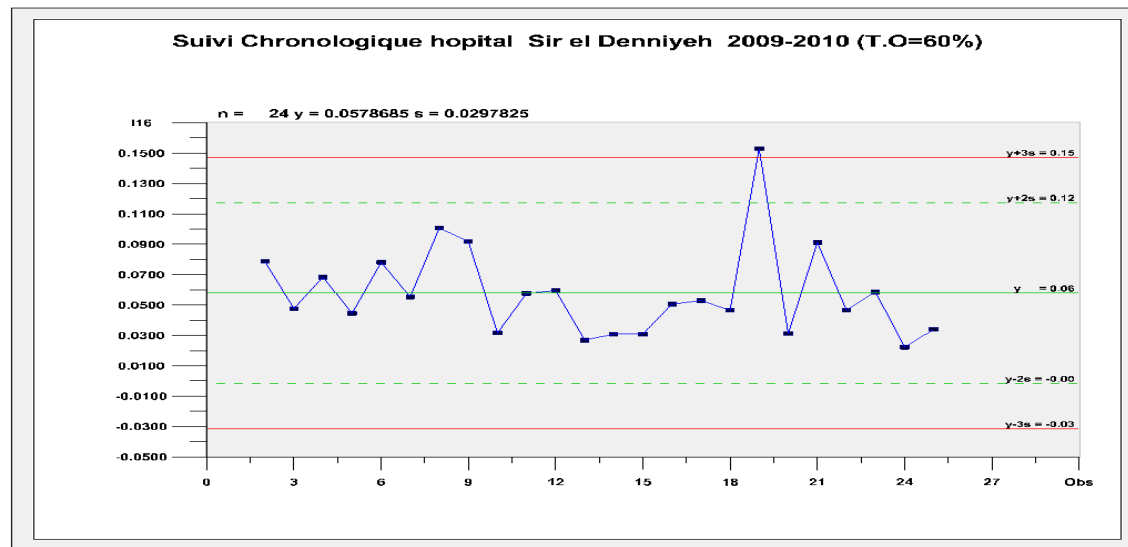
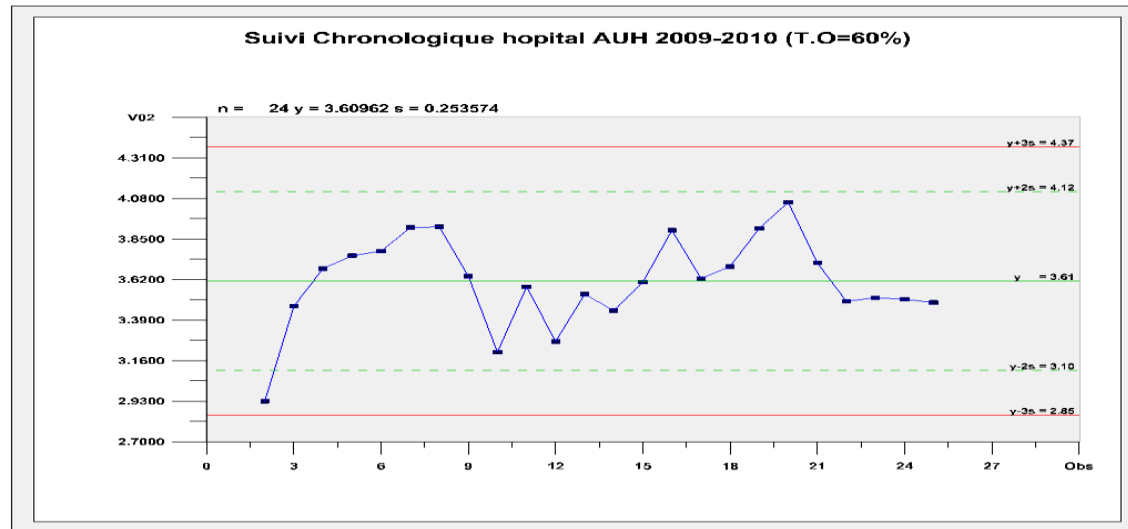




## Results 5 : Public Awareness

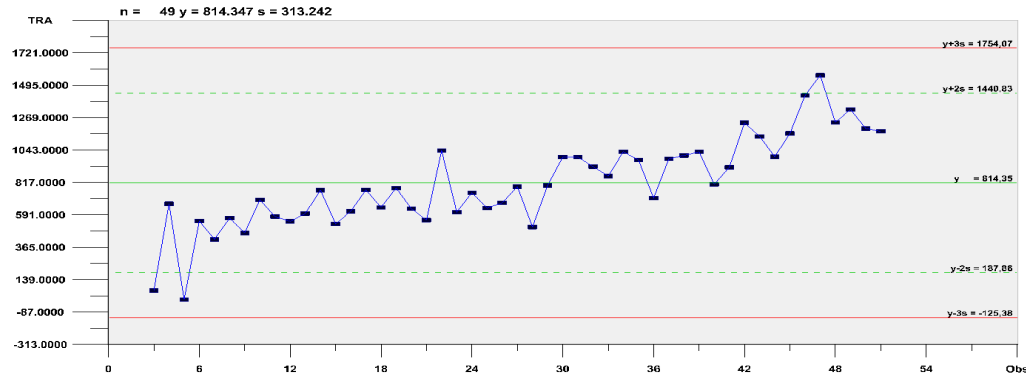


# Results 6: Data Analysis

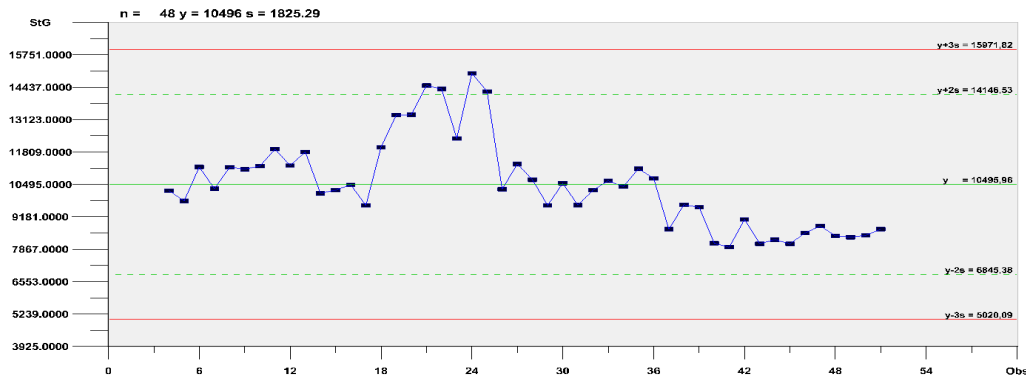


# Results 6: Data Analysis

Suivi Chronologique - SUIVI POIDS DASRI - 02/02/11



Suivi Chronologique - SUIVI POIDS DASRI - 02/02/11



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# Guide de la gestion des Déchets d'Activités de Soins

*Liban*  
*Edition 2014*



# Perspectives

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