

# pre-waste





## Re-Use Strategies

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Communication Seminars for INTERREG IVC Projects



# Objectives

- Wasteserv engaged Recycle JV composed of:
  - EMDP Ltd. (Malta) 
  - Ambiente s.c. (Italy) 
- To assess reuse potential within the Maltese Islands
- Study focused on:
  - The reuse potential of construction & demolition waste (C&D)
  - The introduction of reuse network in Malta dealing in:
    - Furnishings and other wood including pallets;
    - (Waste) Electrical and Electronic Equipment (W-EEE);
    - Unwanted household items (decorations, toys, etc.).

## Objectives — construction & demolition waste

- To assess **the reuse potential** for construction and demolition (C&D) waste streams in the Maltese islands.
- This study investigates the possibility of the establishment of a local reuse network in order to **divert C&D waste from landfills and trade it as a resource.**
- Identify **the state of affairs** in the local reuse industry and identify barriers hampering the development of said industry.
- Identify **reuse opportunities** which can be exploited in the internal market.
- Define **waste minimisation measures** including guidelines and standards on the reuse of C&D waste streams.

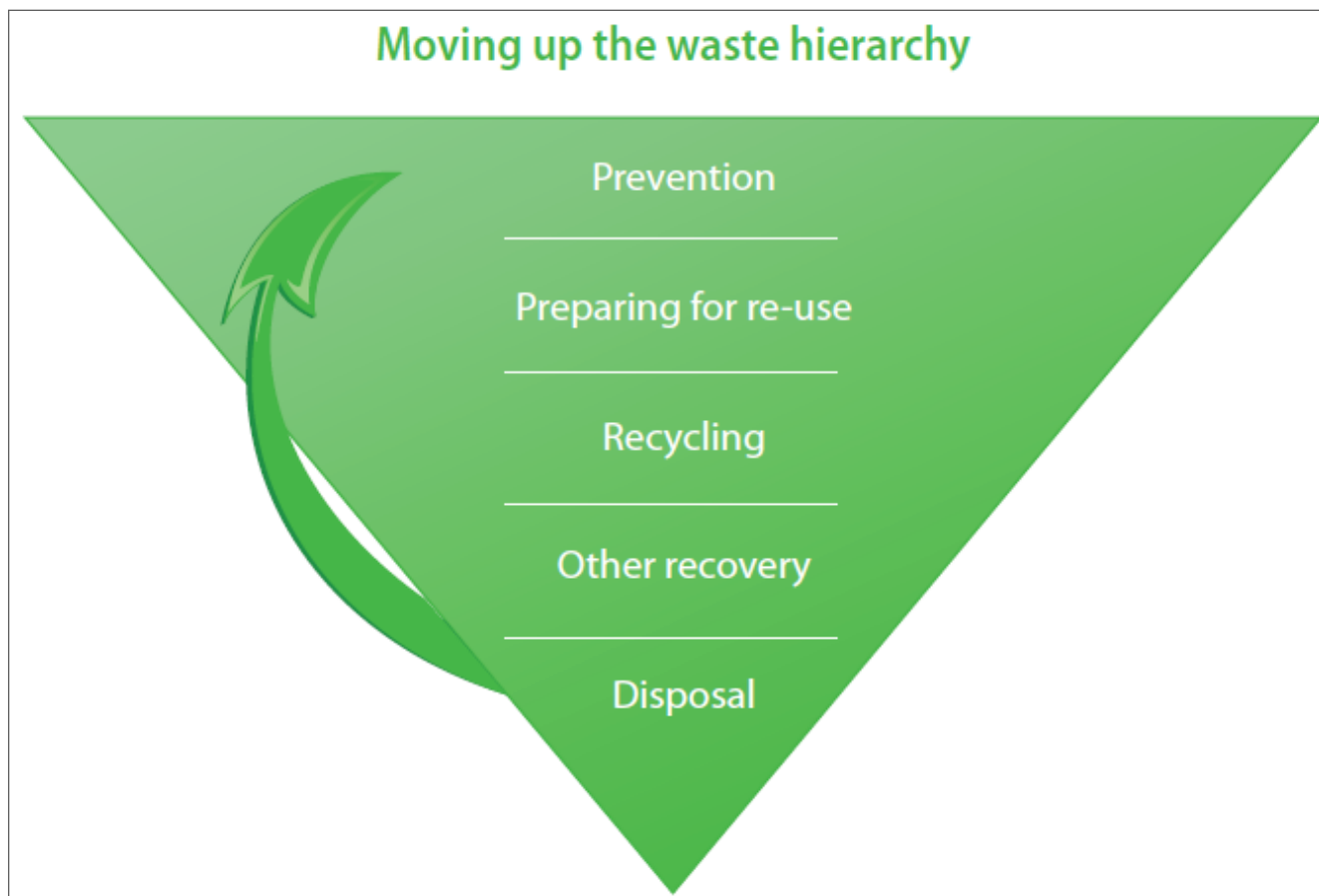
## Objectives – MSW Streams

- This Study focuses on three MSW Streams in the Maltese Islands that result to have the biggest “*reuse potential*”, - i.e.:
  1. **Furnishings and other wood including pallets;**
  2. (Waste) **Electrical and Electronic Equipment (W-EEE);**
  3. Unwanted **household items** (decorations, toys, etc.).
- The aim of the Study is investigate the possibility of setting up a ***Reuse Network***, by which people may transfer unwanted items in good condition, especially as concerns the three main flows of waste
- The Study contains even a proposal for a ***Waste Reduction Programme*** addressing the three MSW streams, drawn as a series of “*action sheets*”, each for a specific reduction measure. The actions are structured in relation to the three types of waste prevention measures laid down by the ***Annex IV of the Waste Directive***

## Objectives - definitions

- **“re-use”** is defined in accordance with the Waste Framework Directive, i.e.: *“any operation by which products or components that are not waste are used again for the same purpose for which they were conceived”*
- **“re-use”** is also one of the principal means to achieve the first priority of the European waste hierarchy – i.e. **“prevention”**, which requires to take measures before a substance, material or product has become waste

# The EU's approach to waste management



# Construction & Demolition Waste

# Construction & Demolition Waste

- C&D waste can be defined as all waste that is generated from the construction and demolition carried out within the building industry.
- Locally, C&D waste makes up on average 84% of total waste generated<sup>1</sup>.
- Traditionally C&D was not separated and either sent to landfills or dumped at sea.
- There has been a global movement towards comprehensive waste management strategies due to increased costs of environmental protection and pressures on land resources.

1. *A Solid Waste Management Strategy for the Maltese Islands, First Update* (December 2010), Parliamentary Secretariat for Tourism, the Environment and Culture, <https://secure2.gov.mt/tsdu/file.aspx?f=5578> (15th October 2012)



# Construction & Demolition Waste

- Some private sector recycling facilities have been set-up locally,
- these are not regularised in any way even though recycling C&D waste requires an IPPC permit from MEPA.

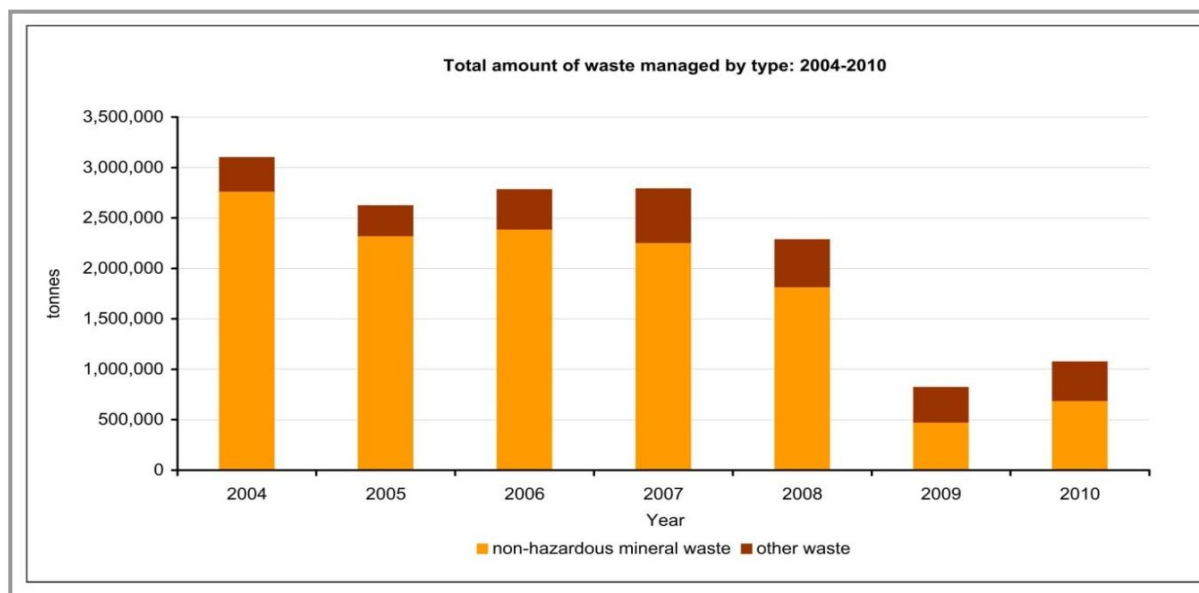


Figure 1: Total amount of waste managed by type: 2004-2010 (Source : National Statistics Organisation (NSO)).

## Quantitative Analysis - Redirecting the Study

- Given the lack of readily available information based on the local market a **questionnaire was formulated** and a sample from licensed C&D operators by MEPA chosen.
- Since C&D waste is considered a highly profitable material and most licensed operators are also contractors, the majority of interviewees were very reluctant to provide information
  - Licensed C&D operators: 28 licensed
  - Sample taken: 14
  - Response received: 5
    - of which not all questionnaires were fully completed.
- This resulted in a non-representative sample.

# Redirecting the Study

- It is common practice for contractor's to recycle excavated material on-site during the construction projects (including road building, large excavations, etc.),
  - Given that such recycling impinges on the financial outcome of the particular project's economics – contractors are vary wary on the dissemination of information.

# Legal Framework & Local Law

- In 1991 waste management was not included in the provisions of the **Environment Protection Act (EPA)**
- EPA was amended in 2001 - prior to Malta becoming a full member state of the EU.

# Summary of LN 337/2001

- **LN 337/2001 Waste Management (Permit and Control) Regulations** issued under the EPA provides the general legal framework permitting and controlling waste management in Malta.
  - All persons undertaking waste disposal or recovery operations **must keep a record** of the quantity and nature of waste disposed, the origin and frequency of collection.
  - For monitoring purposes, the records that are required under Regulation 16 must be kept for at least **12 months by waste carriers** and **3 years by waste managers**.
    - This information must be readily available on request of the Authority.
  - Said regulations are also **applicable for hazardous waste**,
    - under **no circumstances can** hazardous waste **be mixed** with non-hazardous waste.
  - Conspiring, attempting, aiding, or abetting any other person to infringe these Regulations makes one guilty of an offence.
  - Other penalties comprise paying for the expenses incurred by the Competent Authority, revocation of the permit and confiscation of the ‘corpus delicti’, including the vehicle if it was used to commit the offence.
  - LN 22/2009 was passed to supplement LN 337/2001, and effectively brings into effect Directive 2006/21/EC which provides additional measures, procedures and guidance in relation to reduction of adverse effects on the environment and risk to human health

# Construction & Demolition Waste

- It is important to note that the **decline in waste** shown in Figure 1 is most likely due to the **decline in production in the construction industry**, as can be seen in Figure 2.



Figure 2 : Showing trends in employment, wages, salaries and hours worked in the Maltese market (Source NSO)

# C&D Waste Volume Reduction

- Between May 2003 and May 2005, 3.3 million tons of C&D material was deposited in 14 local quarries.
- In January 2005 the subsidy on the disposal of C&D waste was removed and ensures that the waste generator pays the true cost for the disposal of the waste generated.
  - It was thought that this action would reduce the volume of C&D waste, however this is difficult to corroborate since the data from private quarries is hard to verify.
- The Maltese Government:
  - has initiated a plan to reduce C&D waste accordingly:
    - Enforcing development permission, through MEPA
    - Channelling waste through the waste disposal hierarchy;
    - Increasing enforcement to improve compliance rates
    - Ensure developers submit and abide to Construction Management Plans;
    - Assessing Feasibility of using demolished materials for new buildings;
    - Quantification of existing space for disposal of C&D waste.
    - Measures to ensure that proper procedures are adopted by the private sector;
    - It will continue to promote fiscal and other reforms
  - Aims to recycle 70% of C&D waste by 2020.

# C&D Waste Volume

Year	Disposal in quarry sites controlled by WasteServ Malta Ltd.	Privately-managed quarry sites		Disposal at sea	Total amount of managed waste
		Disposal	Recycling		
		2004	2,177,861		
2005	1,185,174	776,875	15,332	357,942	2,335,323
2006	865,713	1,191,580	101,756	329,426	2,488,475
2007	981,789	1,123,828	243,818	146,205	2,495,640
2008	427,905	1,084,948	173,982	300,360	1,987,194
2009	88,046	371,652	63,463	13,370	536,531
2010	51,423	634,500	113,615	n/a	799,538

Note: The disposal in privately-managed quarry sites data for 2007, 2008 and 2009 have been updated.  
 Note: The disposal at sea data for 2009 is incomplete.  
 Source: WasteServ Malta Ltd.; MEPA

**Table 1 : Table showing volume of disposed C&D waste in Malta  
(Source: NSO)**



# C&D Waste Strategy

- The first update in 2010 of the Waste Management Strategy for Malta (which commenced in 2005), must be seen in conjunction with other initiatives including:
  - introduction of C&D landfills and
  - halting to dumping of C&D waste in engineered landfills.
- This revised strategy sets out 9 high level principles which are expected to lead to sustainable waste management between 2010-2015 – therefore:
  - Increasing the observance of waste-avoidance @ the construction planning phase;
  - Explore ways of prolonging the life of buildings;
  - Provide assistance on the use of recycled materials in construction;
  - Advise on toxicity of construction materials before licensing.
- Should unsustainable trends prevail, Government will:
  - consider reducing taxes on recycled materials and
  - further raising the cost of disposal to C&D landfills
    - discouraging the excessive generation of C&D waste

## C&D Waste Strategy

- The European Waste Catalogue – EWC 2002 (2000/532/EC) specifically lists and describes a number of different types of waste, categorising them according to source.
  - This same catalogue has been applied for local C&D waste and for each material explores the opportunity for recovery, reuse and recycling.
- Taking reinforced concrete as an example of this process,
  - the waste material would be separated into steel and concrete,
    - steel will be sold as scrap metal for eventual recycling while
    - concrete will be crushed and re-used as aggregate.

# Way forward

- Five barrier zones:
  1. Gathering reusable material
  2. Quality Assurance
  3. Creating Market Demand
  4. Voluntary Agreements
  5. Enforcement of present legislation

# Way forward – Gathering reusable material

## 1. Gathering reusable material

- a. Construction Site Management Plan for the Reduction of Waste
  - a Management Plan for the reduction of waste on and from construction sites
- b. Deconstruction practices
  - Selective and systematic dismantling of a building structure piece by piece to maximise the recovery of valuable building materials for re-use, recycling and waste management
- c. Separation of waste at source
  - Process of mixing waste leads to the contamination of reusable materials reducing its viability for reuse
  - If separated at source, this would lead to the reduction of cost for the recycler
- d. Guidelines for producers and receivers of waste
  - Guidelines should be set in order to ensure that the best quality of material is maintained and that maximum efficiency is reached through the system
  - Guidelines enhanced by having a standardised monitoring system
- e. Advisory services into avoidance of contamination on site
  - Adequate channels of help will be available
  - Important at the initial stages of the project

# Way forward – Quality Assurance

## 2. Quality Assurance

- a. Inspection, testing and certification of material
  - Essential
  - Achieved through a system of inspection, testing and certification of materials which will serve the purpose of instilling confidence in the product
- b. Batching and Stockpiling
  - Storage of materials is closely linked with their quality

# Way forward – Creating Demand

## 3. Creating Demand

### a. Financial incentives

- Very effective
- Providing high quality material at a lesser price is always an incentive to create demand for a particular product
  - i. Tax incentives
    - Such as tax cuts or tax refunds
    - These systems could be set up by the local authorities and encourage end users to choose reused materials where possible
  - ii. Charging for environmental services making reused material more economically feasible
    - Price of new material increased in order to compensate for the increased environmental pressures this resource has placed
    - Reused material not eligible for price inflations as prices already paid by initial user, increasing the demand for such product

### b. Increase awareness of use amongst users and clients

- Marketing strategy showing the benefits of using reused materials
  - can help increase the market demand for the product, acting as a further incentive for the market to provide for this demand
- Through the creation of a label, possibly reuse certified, by an official body

## Way forward – Voluntary Agreements/ Enforcement

### 4. Voluntary agreements between public and private entities

- These agreements could help to increase the activity of the Reuse Network
- These could be related to the standards and utilisation of reused materials

### 5. Enforcement of legislation

- Enforcement mechanisms should be implemented to ensure that people abide by the law

# Municipal Solid Waste



# Main contents

1. Background analysis
2. A proposal for a Waste Reuse Network (WRN) to be implemented in Malta
  - Case studies
  - Topic: Furnishing and other wood and homeware
  - Topic: Electrical and Electronic Equipment (EEE)
  - The financial dimension
3. Critical issues

# Background analysis...

- To outline the proposal for a local Waste Reuse Network the Study moves from a deep analysis of the context under the following main perspectives:
  - a) Socio-economic trends
  - b) Legal Framework addressing Waste in Europe (waste and e-waste) and in Malta (guidelines and legislation in force; policy and plans)
  - c) The current MSW management in Malta (state of play; amount and composition of MSW collected; economic measures)

## ...Background analysis

- All components raise ***relevant issues*** that we had to take into consideration. In fact:
  - The socio-economic background gives important parameters to assess the market potential of reuse, in particular, as regards the demand side (number of residents, composition of families, composition by age, GDP, average national income, etc.)
  - The regulatory background gives the frame to outline the features of a Waste Reuse Network and its management, (e.g.: the concepts of reuse, recycling, prevention; the relationship between these concepts; the arrangements in the management of products or components of products become waste, especially with regard to WEEE, and so on)
  - The current management and economic measures are useful to estimate the opportunity-costs of a Reuse Network (e.g.: the costs and the charges for citizens currently required to manage their unwanted items; disposal charges; etc.)

## Main results...

- To date, bulky waste management takes place in this way:
  - Householders may phone to their own Local Council which offers a weekly service collection. They may also bring their own bulky waste to one of the Civic Amenity Sites (recycling centers), which offer a free service from Monday to Sunday, including public holidays
- The data related to the amount of MSW collected at the five CA Sites show that, with the exception of C&D, wood waste emerge as the major waste streams
- The bulky refuse service by Local Councils are free of charge in each locality for citizens
- Commercial entities have to pay a gate fee to deposit their bulky refuse to the Sant'Antnin Waste Treatment Plant

## ...Main results

- Whilst the CA Sites accept refuse from citizens without charging them, since all costs are borne by the Maltese Government which fully supports this service from the general tax income, the waste management activities at the facilities for collection (CA Sites) have a cost
- Moreover, must be considered that recycling and/or final disposal of certain wastes from Malta is much more expensive than most other European countries, just because of its geographical location (costs for export; specific costs for recycling in the Country of destination)

# A proposal for a Waste Reuse Network: *Case studies*

- The outline of the operating models proposed for the two WRN takes into account even *some effective experiences of reuse*, explored as case studies, such as:
  - London Reuse Network (UK) ([www.londonreuse.com](http://www.londonreuse.com))
  - London Reuse Commercial (UK)  
([www.londonreusecommercial.org/pages/buying\\_furniture.html](http://www.londonreusecommercial.org/pages/buying_furniture.html))
  - Re-use workshop «Rework» (UK)  
([www.wrwa.gov.uk/reuse/rework\\_workshop.aspx](http://www.wrwa.gov.uk/reuse/rework_workshop.aspx))
  - Furniture Re-use Network – FRN (UK) ([www.frn.org.uk](http://www.frn.org.uk))
  - Ordi 2.0 (FR) ([www.ordi2-0.fr](http://www.ordi2-0.fr))
  - Centro del riuso (IT)  
([www.comune.capannori.lu.it/categorie/tags/centro\\_del\\_riuso](http://www.comune.capannori.lu.it/categorie/tags/centro_del_riuso))
  - Fabbrica del Riciclo (IT) ([www.amiu.genova.it](http://www.amiu.genova.it))
  - RAEEbilitando (IT) ([www.consorzioimedia.it/it/le-iniziative/remedia-per-il-sociale](http://www.consorzioimedia.it/it/le-iniziative/remedia-per-il-sociale))

## A proposal for a WRN to be implemented in Malta...

- In relation to the characteristics of the items covered by the three flows, the proposal focuses respectively on the topic below:
  1. Furnishings and other wood and homeware;
  2. Waste Electrical and Electronic Equipment (e-waste)

## Topic: Furnishings and other wood and homeware...

- On the basis of the best practices various reuse operating models might be set up focusing on a service that includes these main activities:
  - a) collection of furniture and other unwanted household items;
  - b) inspection and sorting; *“preparation for reuse” (WFD)*
  - c) if necessary, repair, cleaning and refurbishment;
  - d) resale of second life items.
- Depending on the availability of space, all the operations could occur in the same place, so that those people interested in may visit the store to choose the right item, and have also the opportunity to find out how the new system works
- The relevance of this aspect is greater if the WRN is characterized by a certain social content (e.g.: employment of disadvantaged people; donation of unsold goods to charitable or third sector’ organizations, etc.)



## ...Topic: Furnishings and other wood and homeware

- The organisation may run like a “**one stop shop**” that cover with his own staff all the operations required for resale
- Otherwise, the organisation may focus on one or two core processes and **outsource** the others to strategic partners, notably, when it comes to restoration operations that require special knowledge and skills
- The services should be offered on call, through the activation of a **toll-free number** calling which people will be routed to the appropriate service, collection, with or without need of repair, in order to know immediately where to direct the items, if to the retail outlet or to the repair workshop (if dispersed)

## ...Topic: Furnishings and other wood and homeware

- The organisation should also use the ***Internet***, plus the various social network systems, both as:
  - an online booking system to arrange a collection; than
  - a sales channel, by running own shops on their websites, or, simply, by pointing address and location of the various retail outlets for who might wish to purchase a re-usable item for his own home or office
- At a later stage, it could be evaluated *whether to extend the target customers* of the organisation, in term both of donors and buyers, further than the families, to offices and businesses, removing office furniture

## Topic: Electrical and Electronic Equipment (EEE)...

- WEEE is the fastest growing waste stream in the EU
- Regarding the reuse potential of e-waste, we have to consider that, if extending the product life of EEE by re-use is seen as a sound way to contribute to the goal of resource conservation (materials and energy) since less equipments have to be produced to cover consumer demand, on the other hand, new appliances tend to consume less energy during use
- Moreover, reuse often compete with recycling as an end of life solutions, since WEEE itself is an economic resource (material value is currently estimated in the order of magnitude of €2bn a year in the EU)
- Hence, if re-use attempts to optimize the use phase of a product in order to achieve greater resource efficiency, there is **a potential “trade-off” between resource conservation** in the production phase, **and energy consumption** during the use phase, making reuse not a priori a goal-oriented option

## Solving the E-waste Problem – StEP – Initiative

- That's why focusing this topic we paid special attention to the “**Solving the E-waste Problem – StEP – Initiative**” ([www.step-initiative.org](http://www.step-initiative.org)), a project of various UN organizations with the overall aim to solve the e-waste problem adopting a *sustainable approach*
- According to this Initiative, re-use of EEE or its components is seen *in the context of the waste hierarchy*, wherein the avoidance of waste generation is to be preferred to waste processing (recovery of materials and energy and disposal)
- Notably, the “*Best Practices in Re-Use: Success Factors and Barriers*” project identified **two criteria of successful for a reuse operating model**:
  1. when it contributes to the extension of the use phase of products *with an environmental, economic and social potential for re-use* and thus to the partial avoidance of e-waste;
  2. when it is *financially viable*, i.e. capable to generate *a stable income* through the sale of products and services or through other income streams, which enable it to properly perform and develop its operations *in the long term*.

## ...Topic: Electrical and Electronic Equipment (EEE)

- On the basis of the case studies analysed and the StEP initiative, it may be set up a reuse operating model to exploit the market potential of the e-waste reuse in Malta including many **processes**, as:
  - collection of e-waste;
  - inspection and sorting;
  - preparation for reuse;
  - resale of second life items (redistribution).
- Compared to the other homeware items, the development of these processes for the resale of appliances involves **specific operations** to be focused, in particular, in the case of computer equipment
- Firstly, once **collected**, the products are **tested** for function and product safety.
- Then, re-use organizations may offer specific **after-use services** (e.g.: data destruction, refurbishment for remarketing or environmental compliance certification).

## ...Topic: Electrical and Electronic Equipment (EEE)

- In general, the process of *preparing for the re-use* may comprise (one or more) activities such as:
  - Disassembly;
  - Cleaning (including data erasure);
  - Inspection;
  - Component exchange;
  - Component retrieval;
  - Component reprocessing:
    - Mechanical (e.g. by manufacturing operations)
    - Electronic (e.g. SMD mounting)
    - With IT processes (e.g. bios flashing)
  - Reassembly, including recombination of parts from different cores;
  - Testing.

# Financial dimension...

- Regarding the ***financial dimension***, it is important to consider whether the operating model pursues a for profit or a not-for-profit purpose, since this decision also impacts the main costs and revenues categories
- In general, the ***cost structure*** depends strictly on the reusing operating model adopted (i.e.: for-profit or not-for-profit purpose; the set of operations that will be performed between the collection and resale of items; outsourcing of some activities; the market segment and the distribution channels; etc.)
- ***Revenues*** can either originate from: sales of products, components and parts; sales of services; sales of sorted material for recycling; public or private funding (as supporters of the re-use project). In addition, may also be evaluated to lease the items (notably, with respect to office furniture)

## ... Financial dimension

- Between incomes should also be considered the ***opportunity cost*** resulting from avoiding to deal with such goods as waste. Thus, the costs of all operations necessary for the resale of the items shall be compared with the costs associated with *all necessary operations for recovery, recycling and disposal of the items and its components*, including any (significant) cost for the *waste exports*
- The policy of ***increasing the cost of waste disposal*** is likely to have a positive, indirect beneficial effect on reuse activities.
- Lastly, in Malta should be introduced a ***fee*** for the collection service (that, in any case, citizens already pay indirectly through taxes): establishing a specific cost related to the collection service would have the benefit for citizens to be envisioned as a real "*fee*", the amount of which, clear and certain, would be benchmarked to the actual use of the service requested



## Critical issues...

- The Study carried out let opened some critical issues to deal with the ***following further works***:
  - ***Propensity to consume survey***, focused on second hand items by the Maltese population, aimed to define the potential customers of the reuse network and to highlight the attractions of the new enterprise;
  - ***Market plan***, focused on the potential partners and the distribution channels. According to these last findings, it will be more clear if it will be more suitable setting up one or more workshops, dispersed in the Islands, and, then, resale the second-hand items through a network of (private or social) retail outlets, or to arrange (one or more) center(s) that covers all operations, from collection to retail. Moreover, this plan will enable to look closely at the internal strengths and weaknesses of the business, and to identify external threats and potential opportunities;
  - ***Human resources plan***, aimed to outline the personnel structure, taking into account that people are the greatest resource of any business venture. Notably, this plan will focuses the attention on work force, their training needs as well as their material needs in terms of health & safety, professional development, job satisfaction and remuneration, and so on;

## ...Critical issues

- **Budget planning**, that will provide the financial planning detail for every aspect of the business (e.g.: employee costs , rent, IT investments, machinery costs, sales value, direct material costs, charges, etc.). The ultimate target that should result from the budget is the budgeted net profit. Obviously, the results obtained by this plan will have a different meaning depending on whether it will be chosen a profit or non-profit purpose. Anyway, it is a key tool for operating the business, and by facilitating comparison of actual performance (to manage such items as waste) versus budgeted performance, it highlights the operating variances to management and the needs to taking corrective action.
- **Awareness and market campaigns**, aimed to disseminate in the Maltese community the attention to environmental sustainability, the adverse impacts of generation and management of waste, the issues that a proper management still involves for the features of the archipelago, and the need to prevent or reduce such impacts by reducing the use of resources and materials and improving the effectiveness of such uses. More specifically, the activation of communication initiatives is crucial to raise the attention of stakeholders to the issues at stake and, then, for the success of a reuse network.

# Waste Reduction Programme

- The programme is outlined as a series of “action sheets”, addressing the three MSW streams covered by this feasibility study, structured into the following fields:
  - (i) Subject matter
  - (ii) Purpose
  - (iii) Brief description
  - (iv) Key stakeholders
  - (v) Monitoring measures
- The term “*reduction*” shall be understood under the definition of “*prevention*” given by the Waste Directive
- In accordance with **Annex IV** (“*Examples of waste prevention measures referred to in Article 29*”) **of the Waste Framework Directive**, the actions are structured in relation to the three types of waste prevention measures laid down

## Measures that can affect the framework conditions related to the generation of waste

1. Awareness campaign
2. Adoption of the Waste Management Plan for the Maltese Islands
3. Calculation of waste fees based on the actual production of waste
4. Implementation of an efficient information system for the SWM data

## Measures that can affect the design and production and distribution phase

1. Promoting the proper use, maintenance and repair of products
2. Information campaign on waste prevention practises directed to the trade sector
3. Promotion of creditable environmental management systems

# Measures that can affect the consumption and use phase

- 1. Promoting the development of re-use network in the Maltese Islands**
2. Green Public Procurement
3. Incentives for the dissemination of local initiatives and promotion of best practices
4. Promotion of creditable eco-labels

*Thank you*