



CONSTRUCTION & DEMOLITION WASTE DISPOSAL

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What Is C&D Waste?

- **Construction and demolition (C&D) waste includes all the waste which is generated from various activities like**
 - ✓ **land clearing,**
 - ✓ **excavation,**
 - ✓ **construction, demolition and renovation of bridges, houses, buildings, fly overs, tunnels etc.**
- **Its major constituents are concrete, soil, bricks, wood, asphalt and metal.**

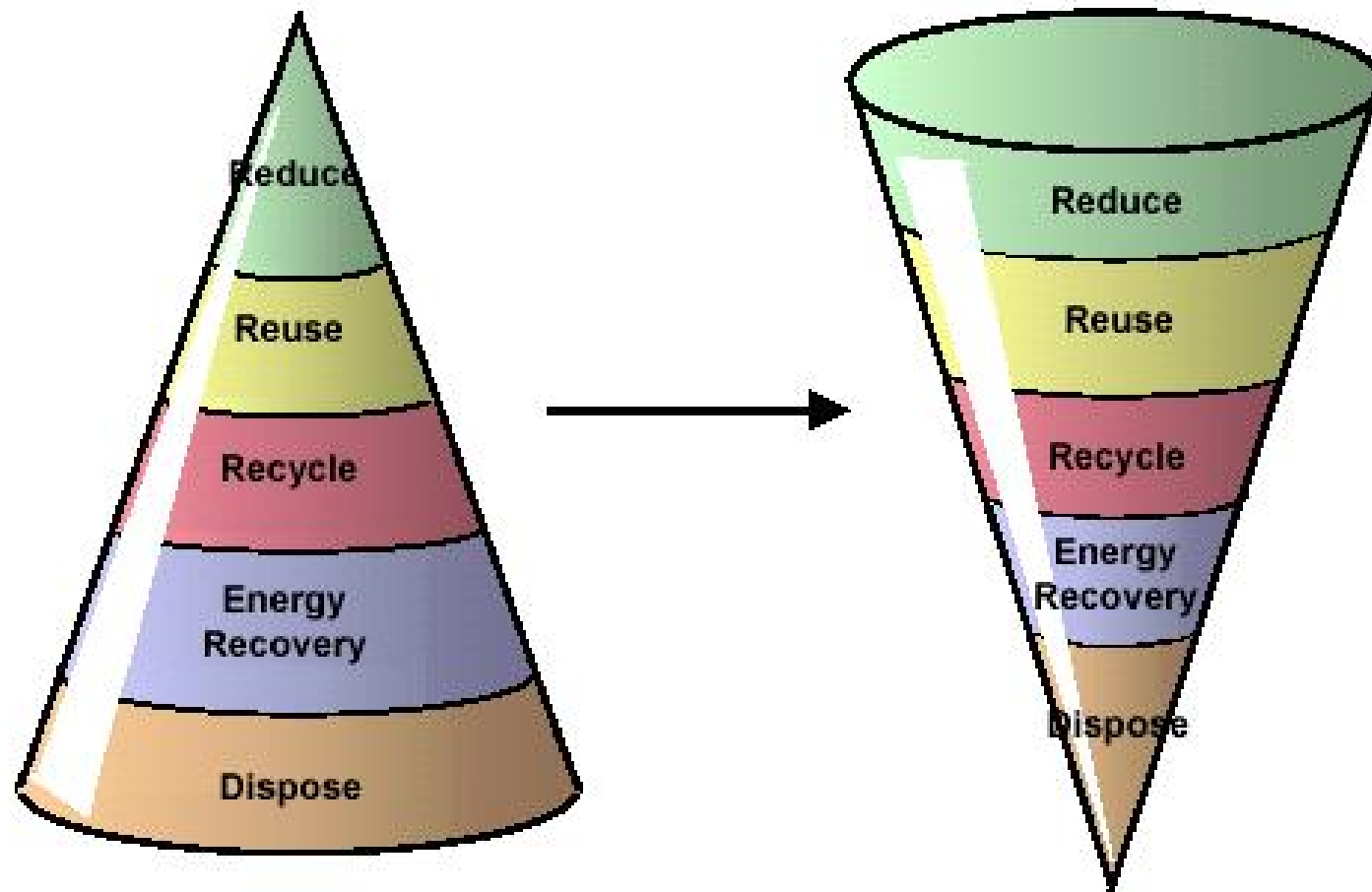
Worldwide Generation of C&D Waste

Country	C&D Waste (in million tons/year)	% of Total Solid Waste Generated
USA (Ann et al, 2012)	164	29
UK (URL 1)	89.6	50
AUSTRALIA (Ann et al, 2012)	7	44
INDIA (URL 2)	12.2	25

Why Do We Need To Recycle and Manage C&D Waste?

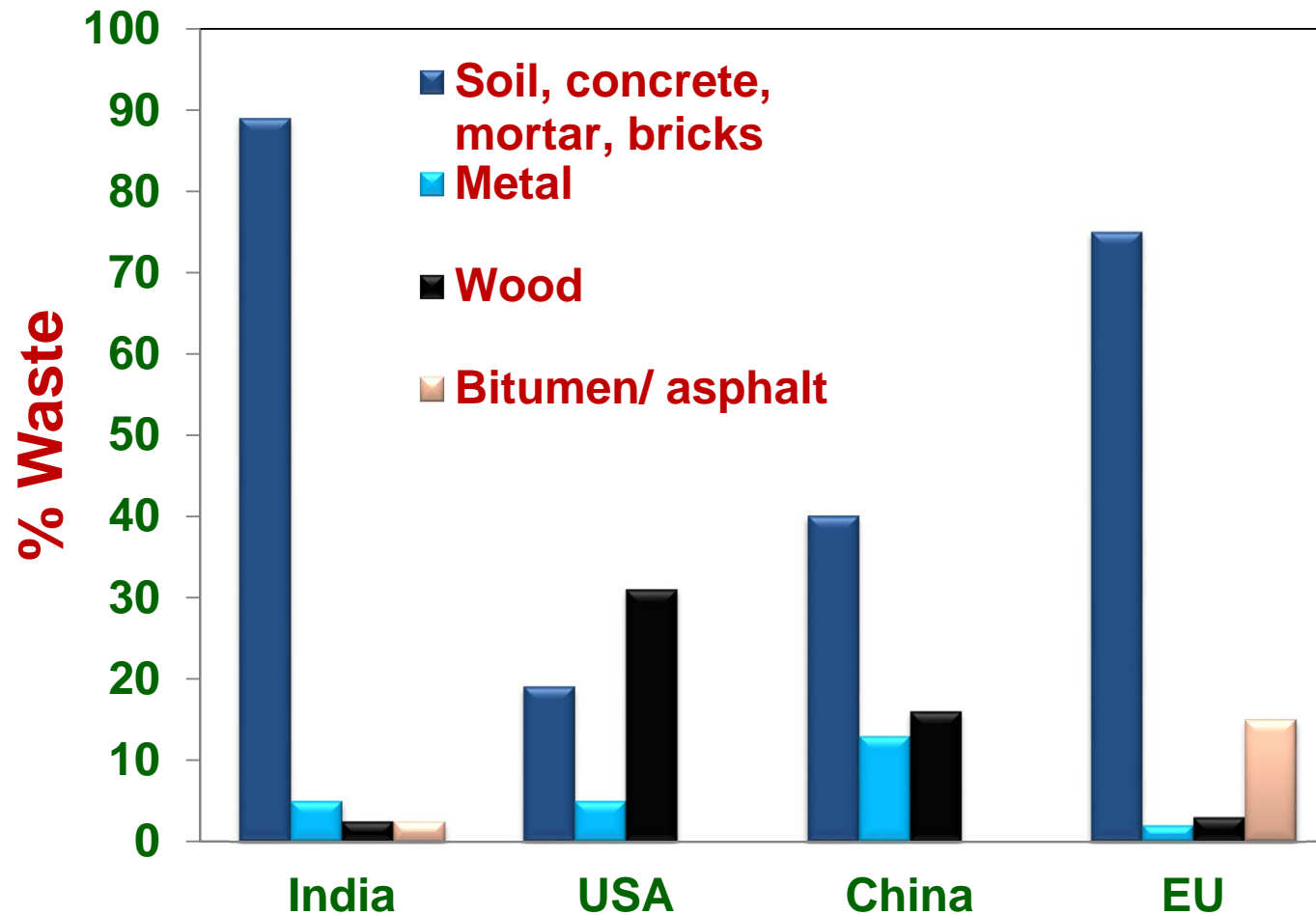
- **To save natural resources like stone, river sand, soil etc.**
- **Occupies large space in a sanitary landfill site**
- **Has tendency to spoil other recyclable materials which are present along with it**

Waste Hierarchy – A Shift in Thinking



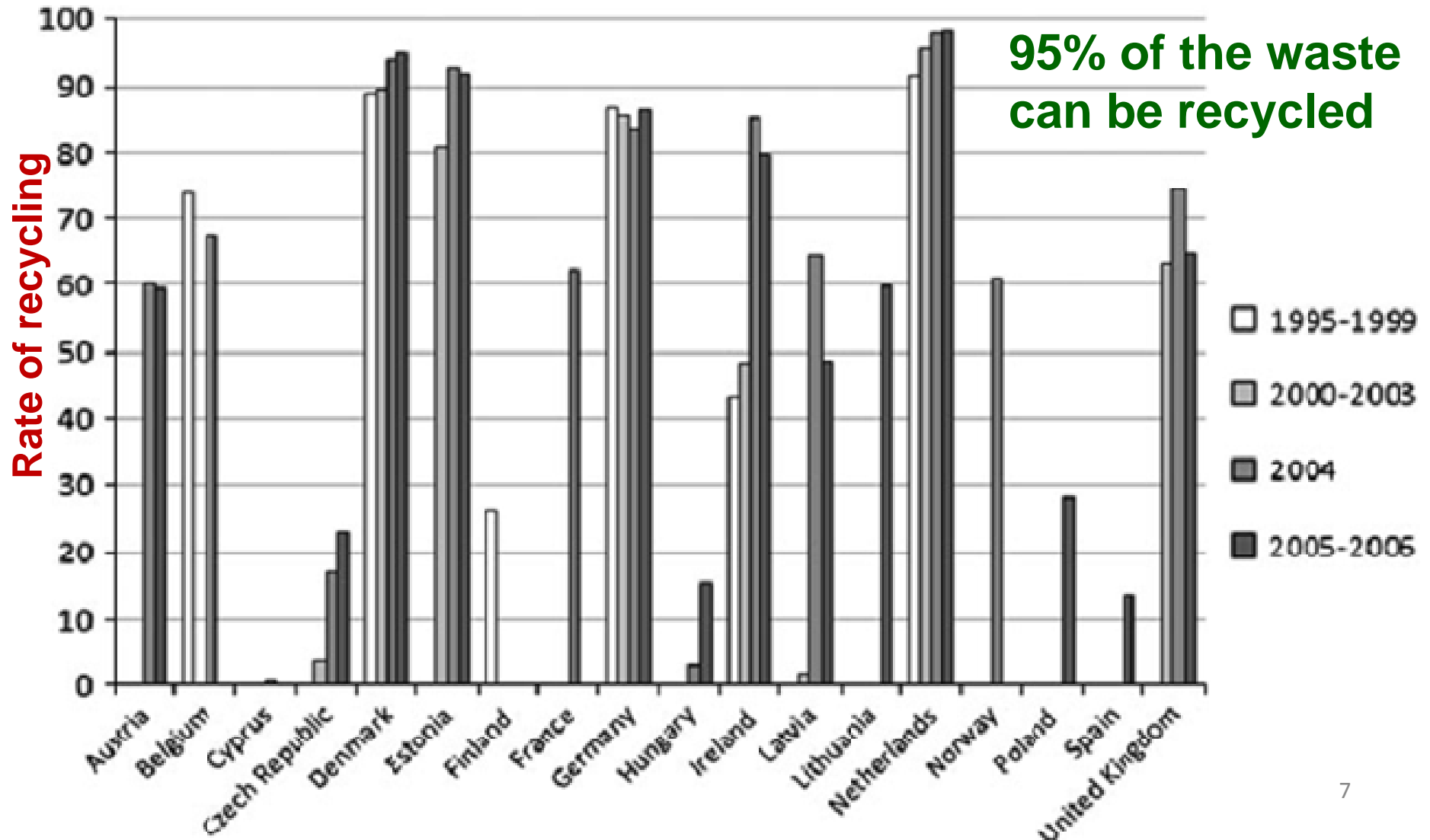
Country-wise C&D Waste Composition

(Sources: URL 6; URL 7; Yunpeng, 2011; URL 8)



The Rate of Recycling of C&D Waste as a Percentage of the Total Generated

(Source: Vantsi and Karki , 2013)



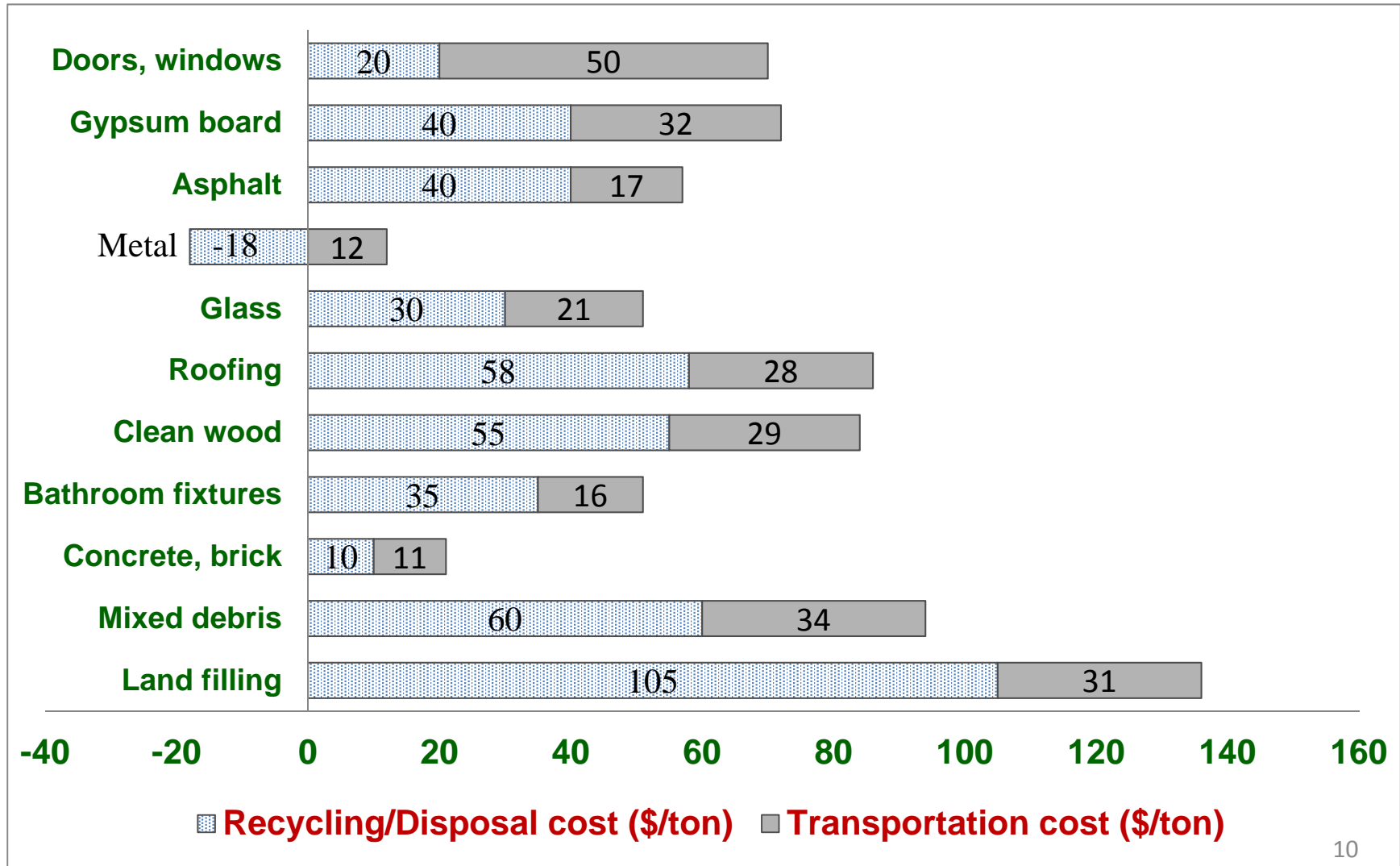
Recycling Options

Waste type	Recycling method adopted	Reference
Asphalt bitumen	“Reclaimed Asphalt Pavements” (RAP). This method is very popular in USA and the EU countries.	URL 7
Brick waste	It can be crushed and used as a road base or drainage material or as a mechanical soil stabilizer. It also can also be used as an adsorbent in water treatment.	URL 8, Singh <i>et al.</i> (2008)
Wood	The wood chips/ fibers thus obtained can be used for manufacturing engineered wood like pressboards and fibreboards	URL 8
Concrete and mortar waste	Crushed concrete may be reused as aggregates in new Portland cement concrete	Palaniraj <i>et al.</i> (2013); Panda and Bal, (2013); Medina <i>et al.</i> (2014); Grdic <i>et al.</i> (2010); Duan <i>et al.</i> (2014); Yang <i>et al.</i> , (2011), URL 9, URL 8.
Metals	Generally sold to a scrap metal dealer at a specified price. Metals like scrap iron can be mixed with the virgin metal in the foundry.	URL 8

Draft Municipal Solid Wastes (Management and Handling) Rules, 2015

- **Responsibility of the waste generator to ensure the proper segregation, storage and collection of C&D waste**
- **Collected C&D waste has to be recycled or processed by the urban local body or agency appointed by it**
- **The waste generator will have to bear the relevant charges for the collection, transportation, processing and disposal of C&D waste**
- **Adopt 3 R concept**
- **Use of recycled C&D waste products (such as in nonstructural concrete, manufactured sand, paving blocks, lower layers of road pavements, colony and rural roads etc.)**

Recycling Cost: A Case from Boston



LEED and C&D Recycling

(Source URL 15)

Recycling is given a lot of importance while awarding LEED ratings

- ✓ 50% recycling of C&D waste = 1 LEED rating**
- ✓ 75% recycling of C&D waste = 2 LEED rating**

Major Issues

- **Marketing**
- **Policy issues**
- **Waste collection**
- **Mid frame of people**

Recommendations for the Development Sustainable Model

- **Specifications and standards for recycled C&D waste products**
- **Awareness campaign**
- **Proper estimation of C&D waste generation**
- **Mandatory use of recycled materials in all construction activities**
- **Initiative from the local administration**
- **Research for the appraisal of recycling options**
- **Landfill levy**

Conclusions

- **C&D waste constitute 25% of the total solid waste generated worldwide**
- **The composition of C&D waste varies in different countries, hence each country need to develop their own composition specific waste management plan**
- **Up to 95% recycling is achievable**
- **RCA can be suitable for use as road aggregates for surface, base and sub - base course**

Thank You Very Much

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