

Our Future World

Five global megatrends that will change how we live

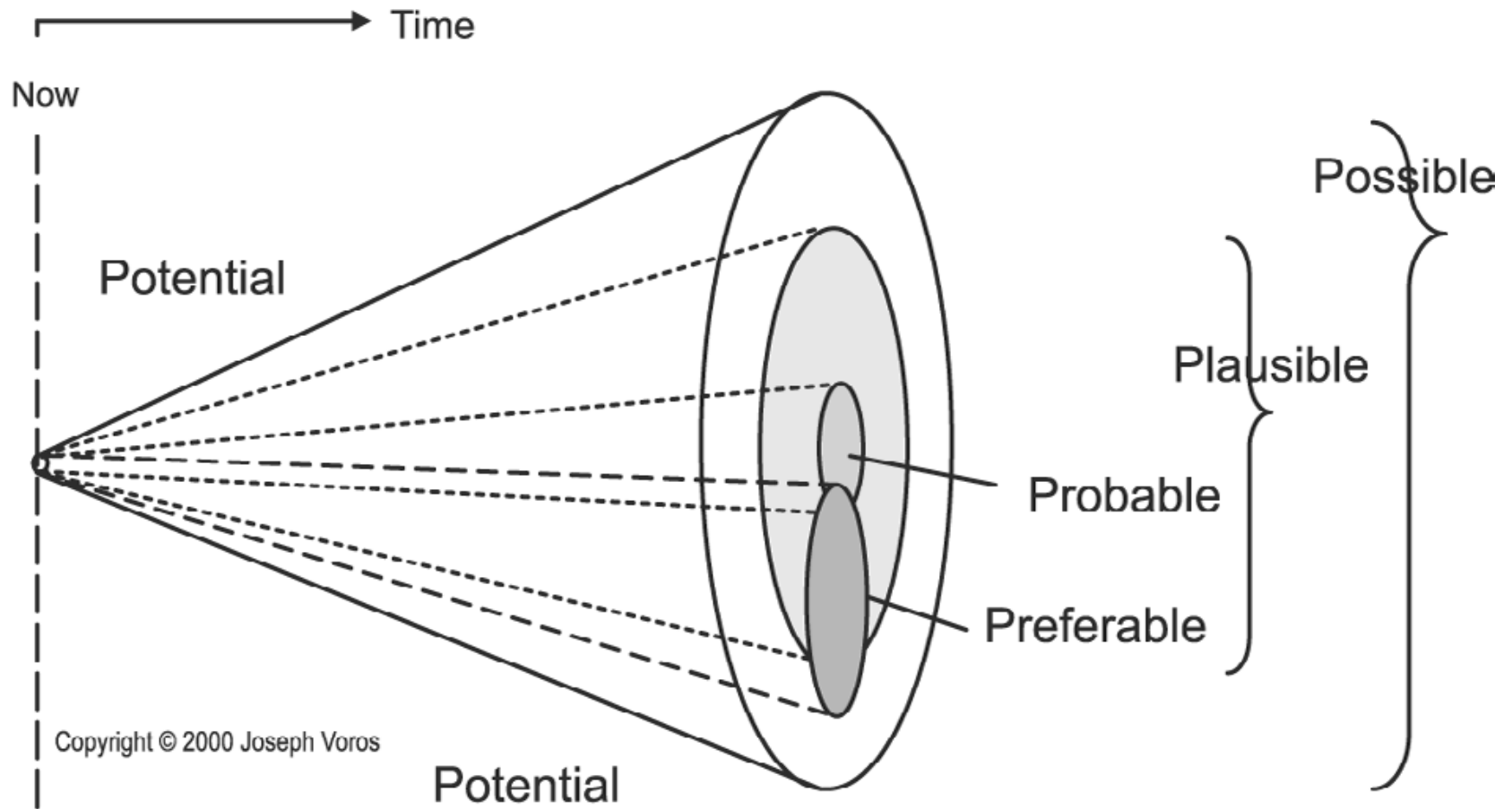
Stefan Hajkowicz and James Moody

With input from over 50 CSIRO scientists and business analysts

Everyone wants to know

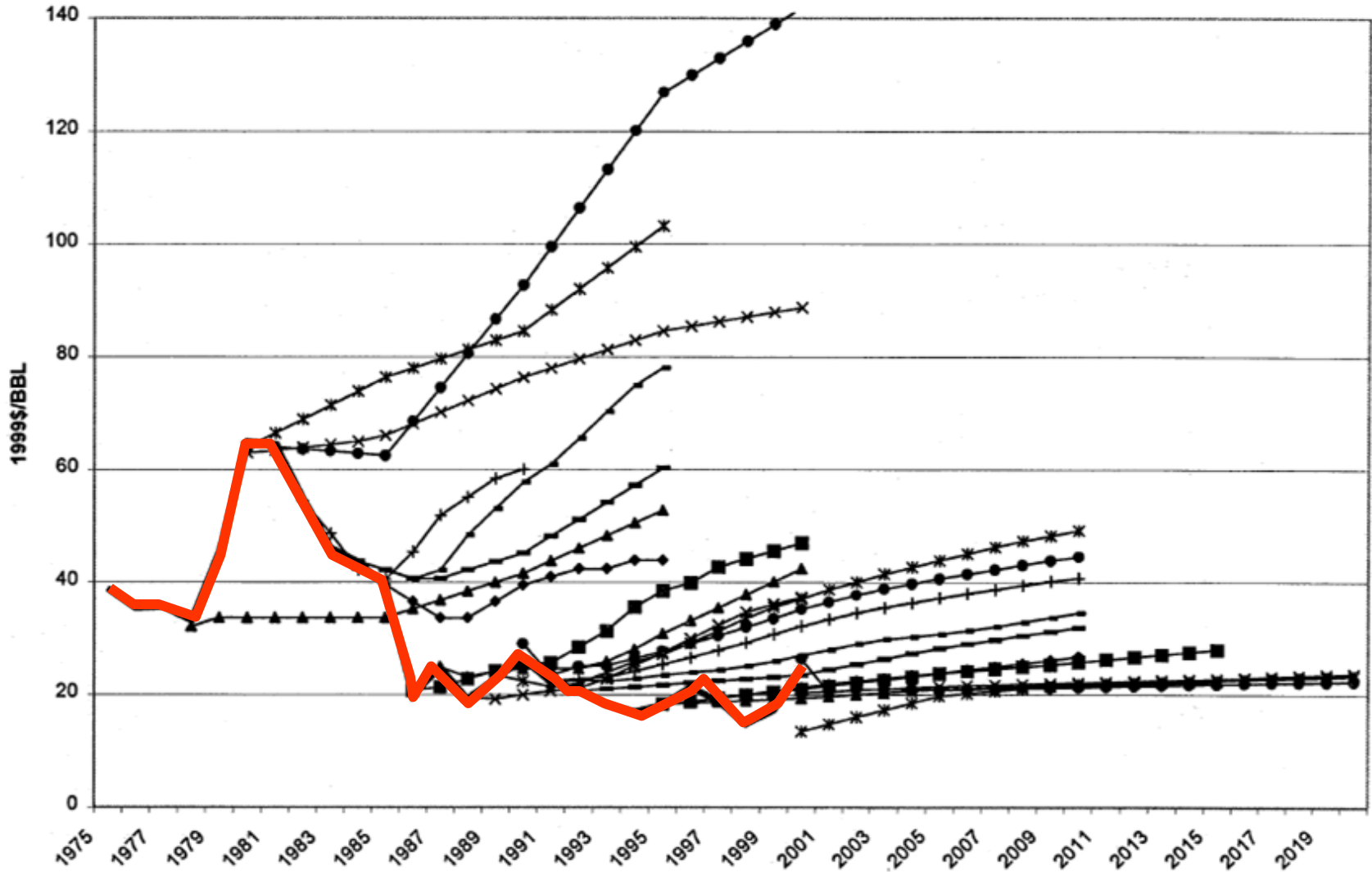


Different futures

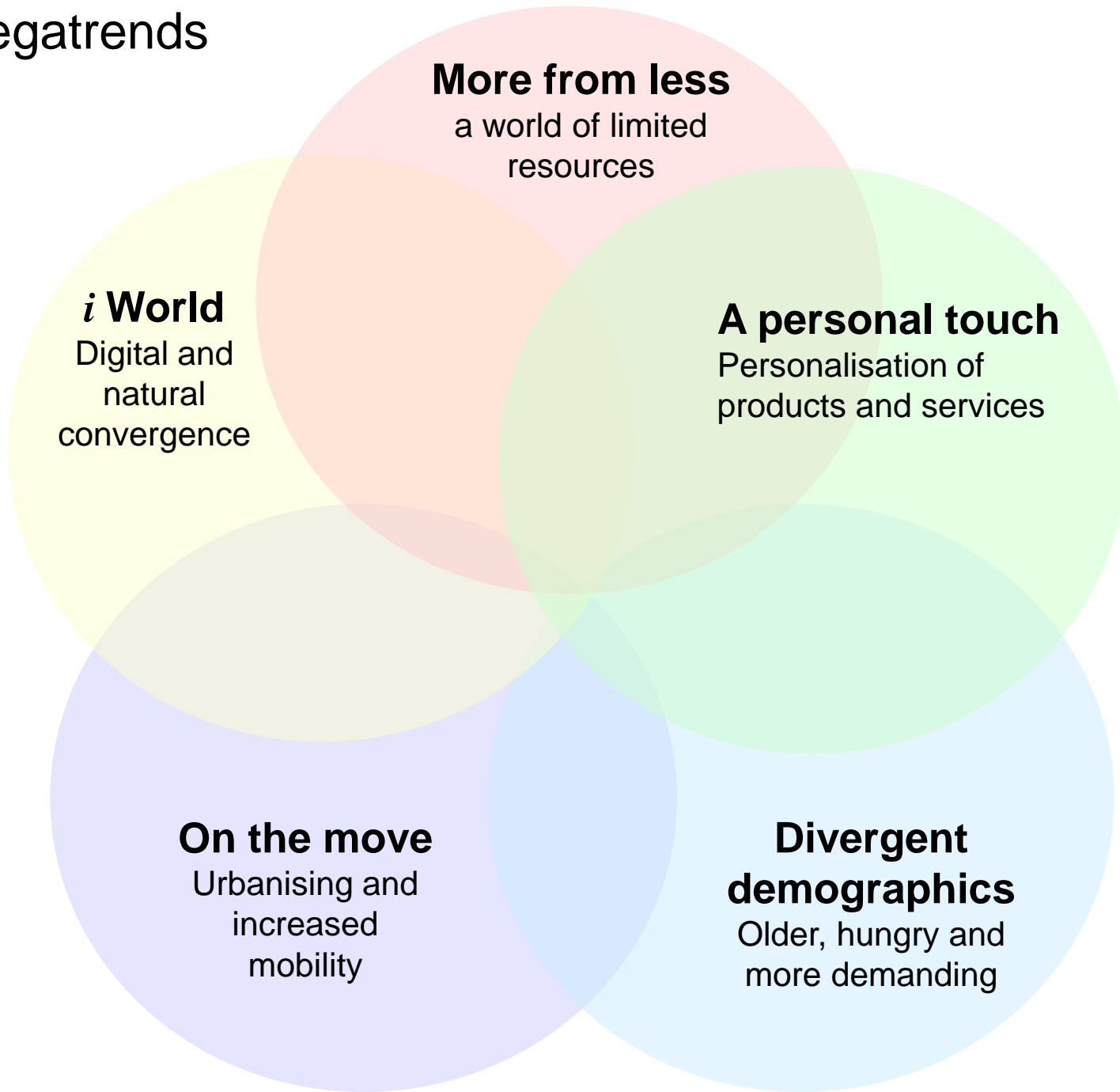


Voros (2003) adapted this diagram from Hancock and Bezold (1994) in the Healthcare Forum Journal

More than forecasting...



The Megatrends

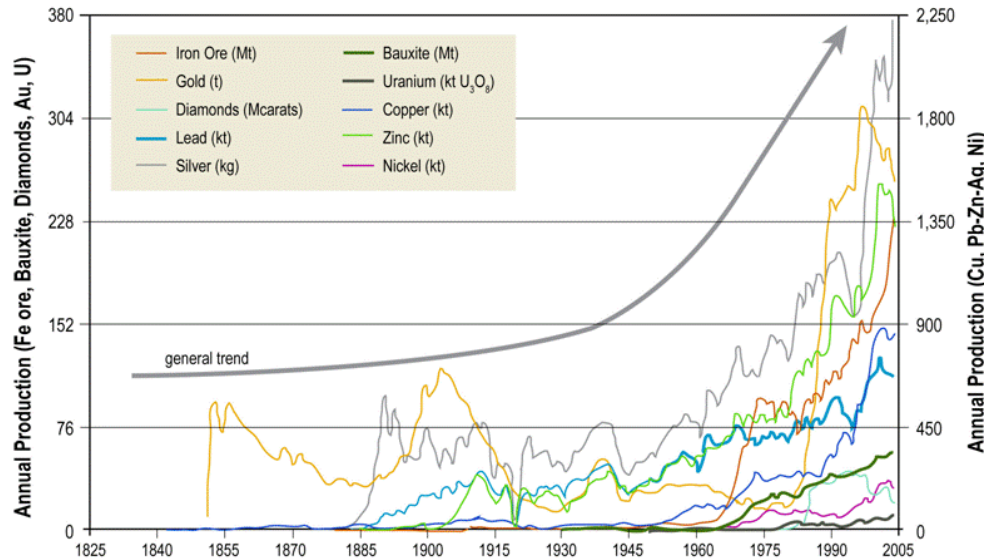


More from less
a world of limited
resources

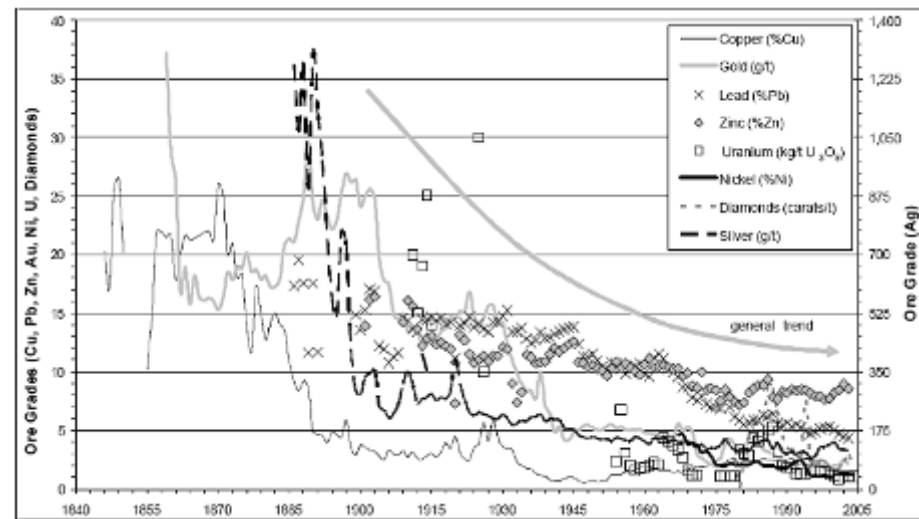
More from less

Declining ore grades

Production of ore



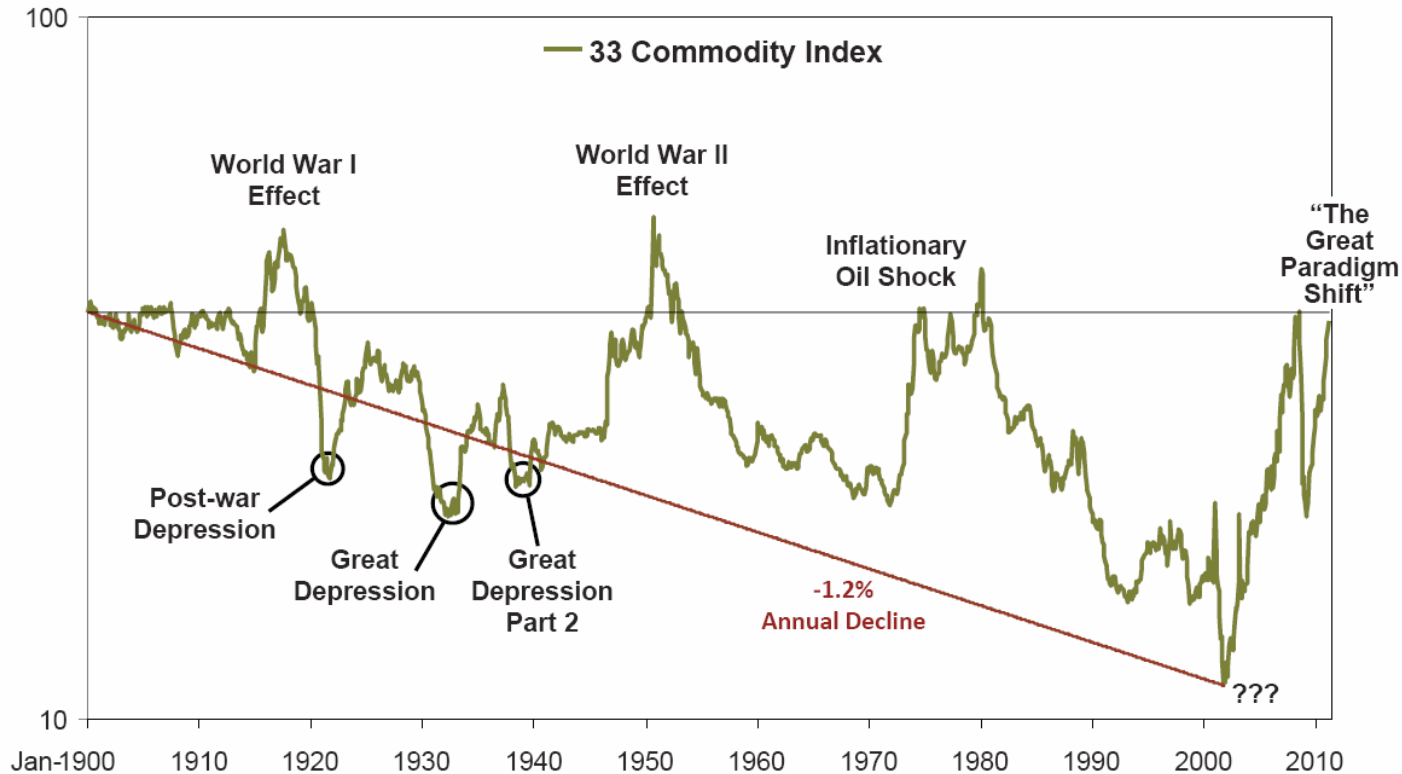
Grade of ore



Source: Mudd GM, 2009. The Sustainability of Mining in Australia: Key Production Trends and Their Environmental Implications for the Future. Department of Civil Engineering, Monash University and Mineral Policy Institute.

Are we seeing a 21st Century “paradigm shift” in commodity prices ?

GMO Commodity Index: The Great Paradigm Shift



Note: The GMO commodity index is an index comprised of the following 33 commodities, equally weighted at initiation: aluminum, coal, coconut oil, coffee, copper, corn, cotton, diammonium phosphate, flaxseed, gold, iron ore, jute, lard, lead, natural gas, nickel, oil, palladium, palm oil, pepper, platinum, plywood, rubber, silver, sorghum, soybeans, sugar, tin, tobacco, uranium, wheat, wool, zinc.

Source: GMO As of 2/28/11

RECYCLING ELECTRONIC SCRAP PAYS

1 TONNE OF MOBILE TELEPHONES YIELDS:

50–150 kg copper

500–700 g silver

150–400 g gold



1 TONNE OF ORE YIELDS:

3,7 kg copper

4,2 g silver

0,2 g gold



Evening shadows, backwater of the Murray, South Australia
H J Johnstone, Britain/Australia, 1835-1907, 1880, London
Source: The Art Gallery of South Australia



Some of the world's leading coral reef scientists estimate that by 2030 60% of existing coral reefs will be destroyed.

Data source: Hughes et al. (2003) *Science*. Vol 301
Image source: Microsoft Clipart



World energy consumption is forecast to increase from 472 quadrillion Btu in 2006 to 678 quadrillion Btu in 2030 - a total increase of 44 percent.

Data source: International Energy Outlook 2009, Chapter 1. US Government, Energy Information Administration
Image source: Microsoft Clipart



Countries which share rivers have a statistically higher probability of military disputes. If the river basin is under drought stress the chances of war a higher again.

Source: Gleditsch *et al.* (2006) *Political Geography* Vol 25.
Image source: Microsoft Clipart

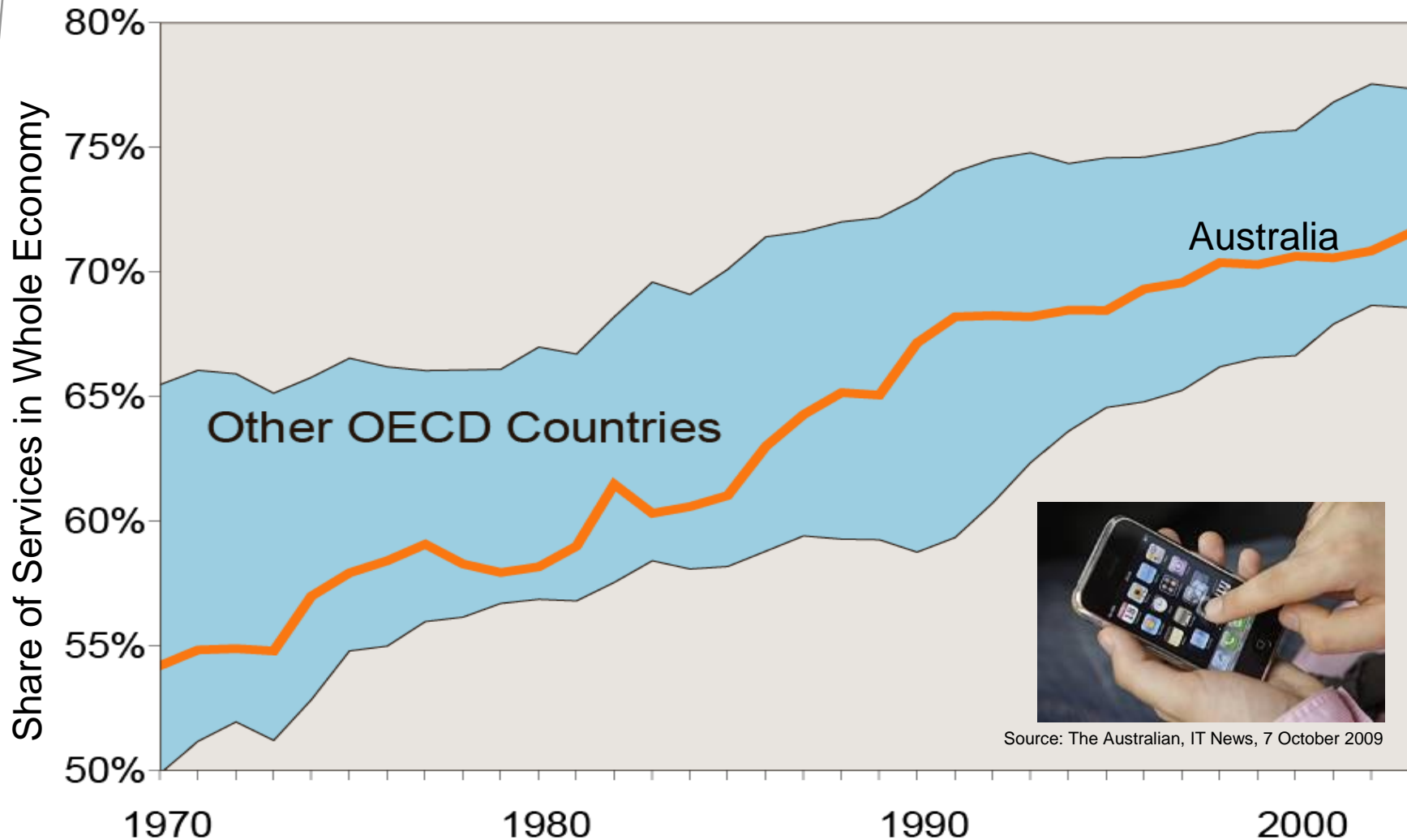


A personal touch

Personalisation of
products and services

A personal touch

Personalisation of products and services



Source: The Australian, IT News, 7 October 2009

Source: PMSEIC Report on Services Innovation

Gen Y: We've got enough stuff, we want experiences, emotions and a moral feel good factor



"Moralsumers"



28 August 2009 - "Flowers covered the entrance of the factory, with over 200 Dunedin residents also handing flowers to Cadbury employees ..."

www.fairtrade.com.au

It is estimated that 30% of a typical workday is lost processing irrelevant information.

And 42% of people admit to using the wrong information at least once a week.

Source: Basex survey, published by Xerox

Image source: Microsoft Clipart



The debt to asset ratio rose from 9% to 19% from 1990 to 2008. Australians now hold A\$1.1 trillion worth of debt.

Source: Australian Bureau of Statistics (2009; Cat No 4102.0)

Image source: Microsoft Clipart

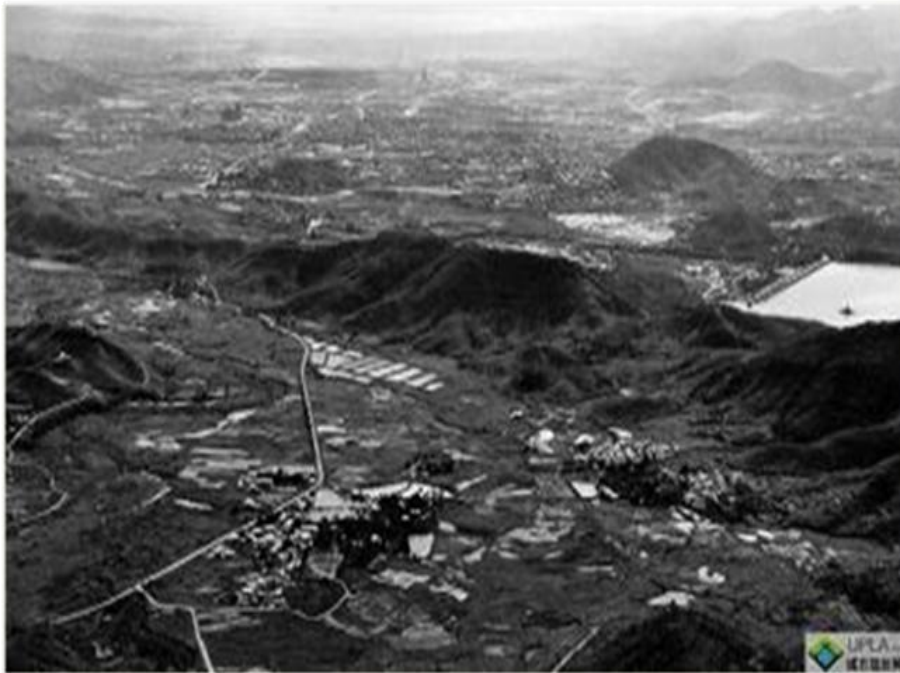


On the move

Urbanising and
increased
mobility

China needs to build 3 cities larger than Sydney every year until 2030 to accommodate rural to urban migration.

Shenzhen 1982



Shenzhen 2007



Image source: The Chinese UPLA urban planning network, <http://www.upla.cn>

Statistic derived from analysis of the United Nations, World Urbanization Prospects, The 2007 Revision Population Database

Jet aircraft passengers worldwide travelled 4,621 billion kilometres in 2008 and this is forecast to rise to 12,090 billion by 2028.

This represents growth of 5% per year compared to global GDP of 3% per year.

Data source: Boeing Current Market Outlook 2009-2028

Image source: Stefan Hajkowitz



Divergent demographics

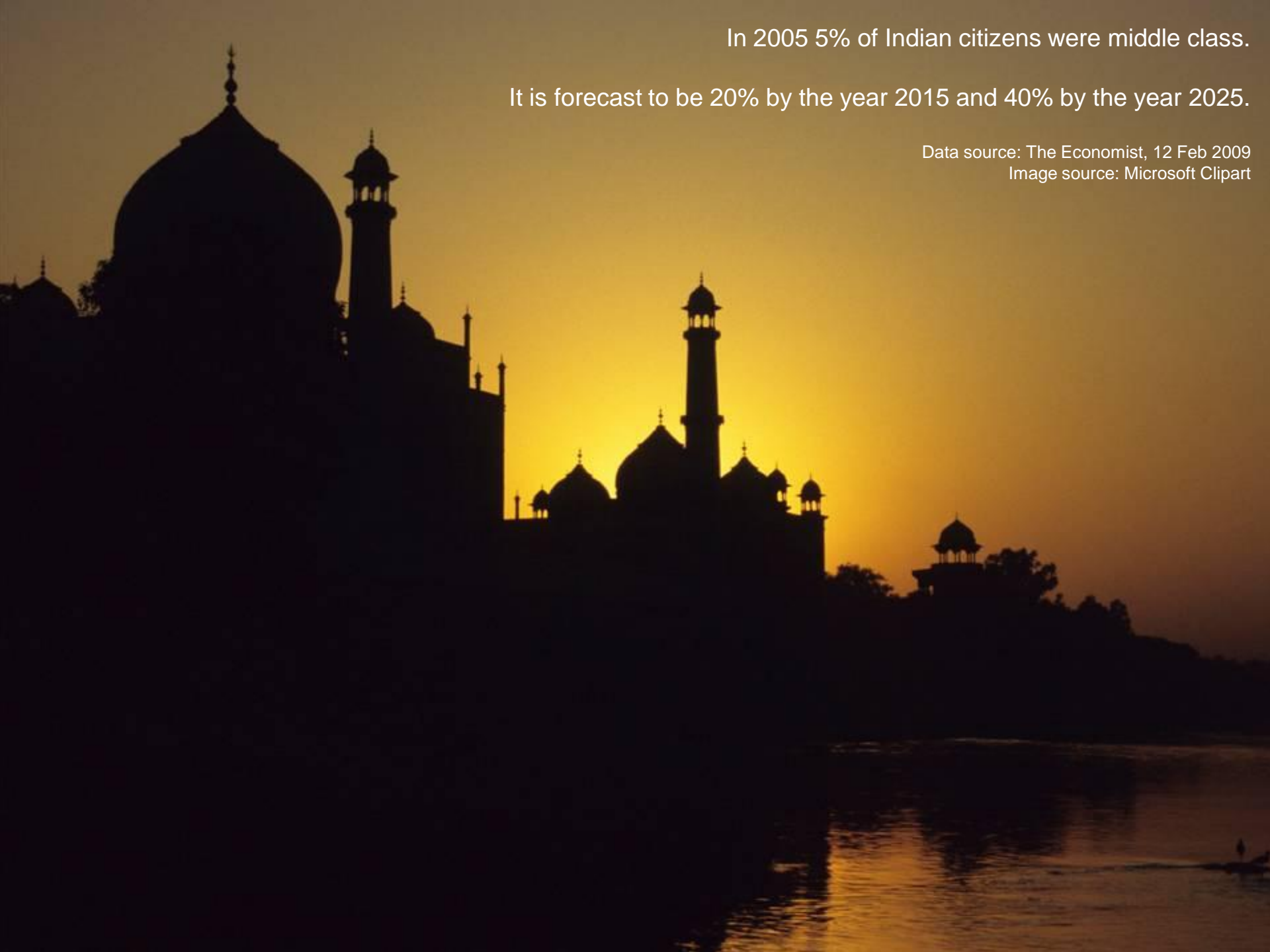
Older, hungry and
more demanding

In 2005 5% of Indian citizens were middle class.

It is forecast to be 20% by the year 2015 and 40% by the year 2025.

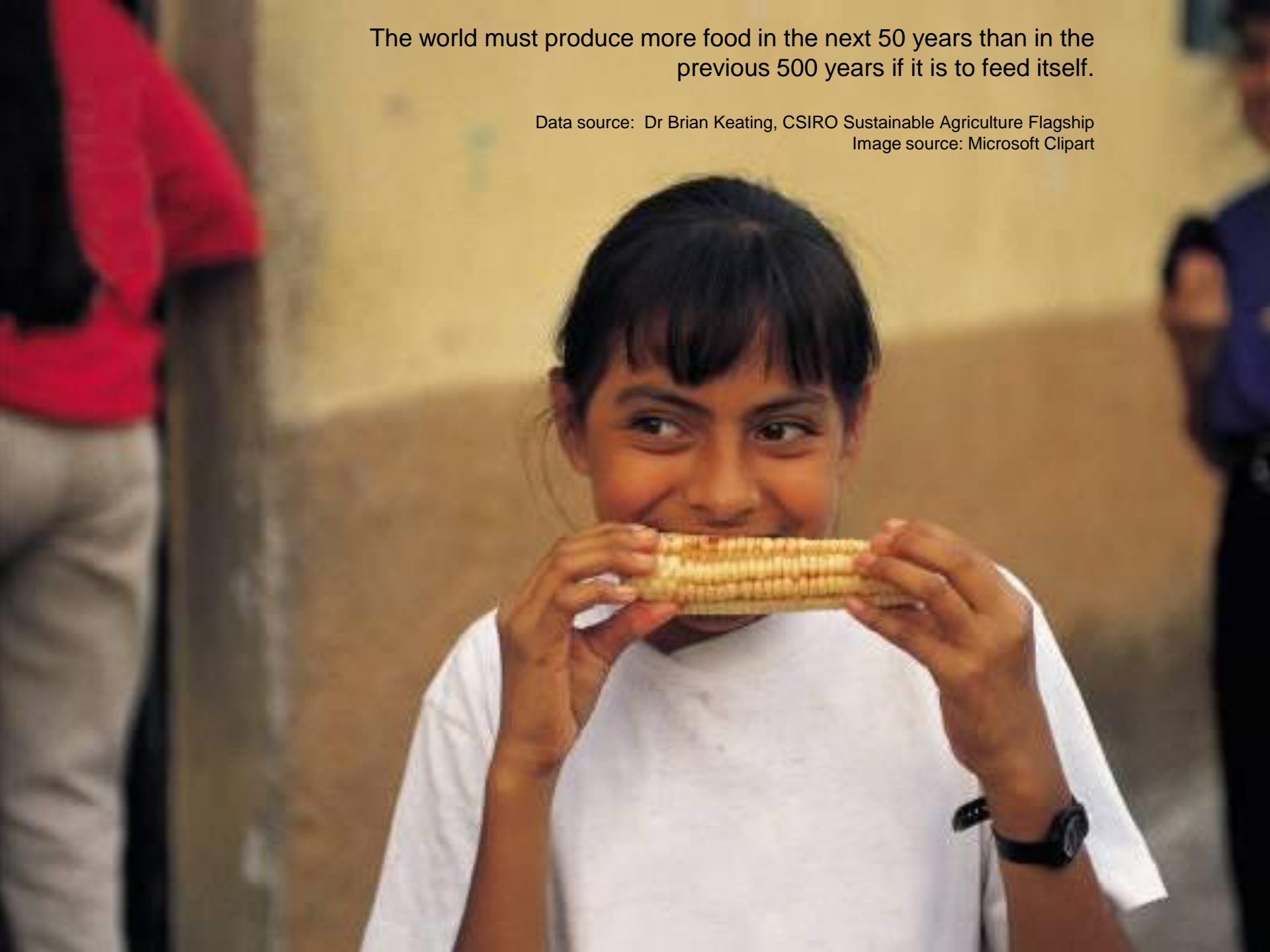
Data source: The Economist, 12 Feb 2009

Image source: Microsoft Clipart



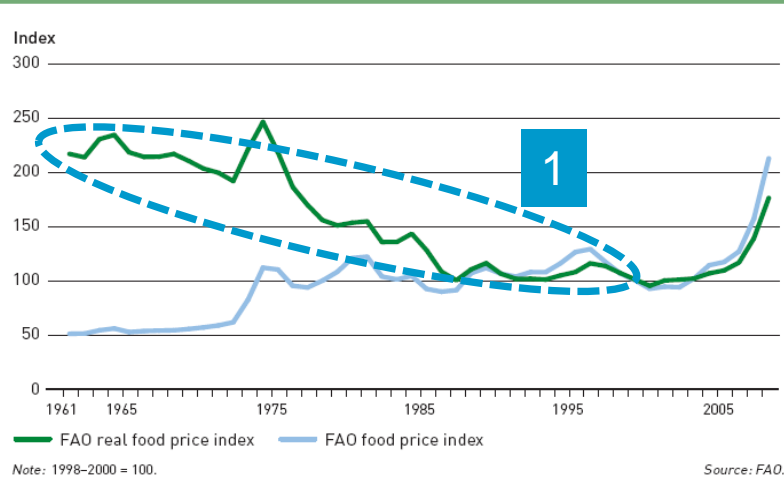
The world must produce more food in the next 50 years than in the previous 500 years if it is to feed itself.

Data source: Dr Brian Keating, CSIRO Sustainable Agriculture Flagship
Image source: Microsoft Clipart



Food Price Trends

Evolution of FAO food price indices, 1961–2008



1 Real prices more than halved from 1960 to 2000



2 Relative stability 1990 – 2006

3 Increased volatility since 2007/08?

In 2002 13% of Australians were over 65 years old.

It will be 27% by 2051.

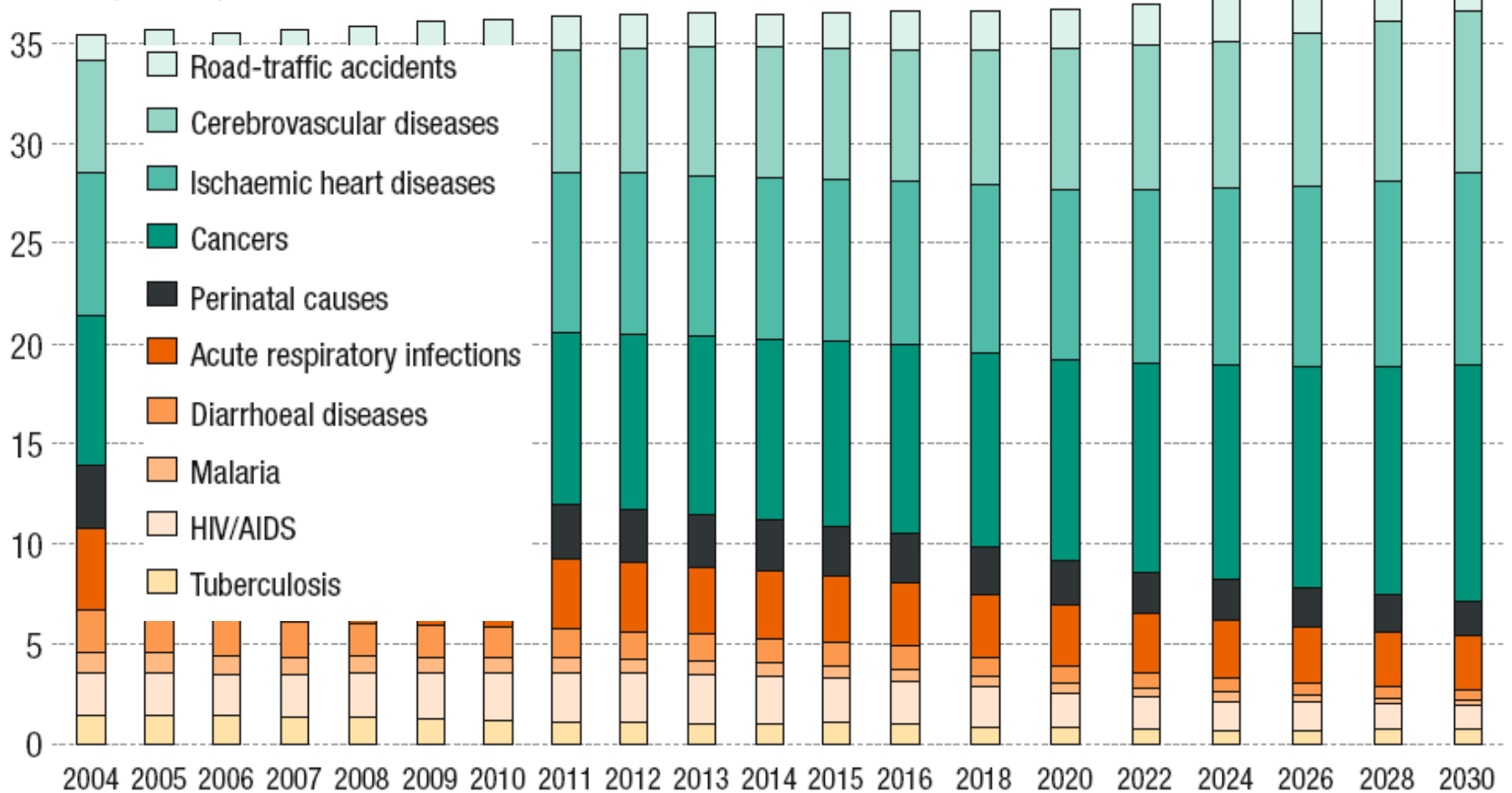
Data source: Australian Bureau of Statistics (Cat. No. 3222.0)



Divergent demographics

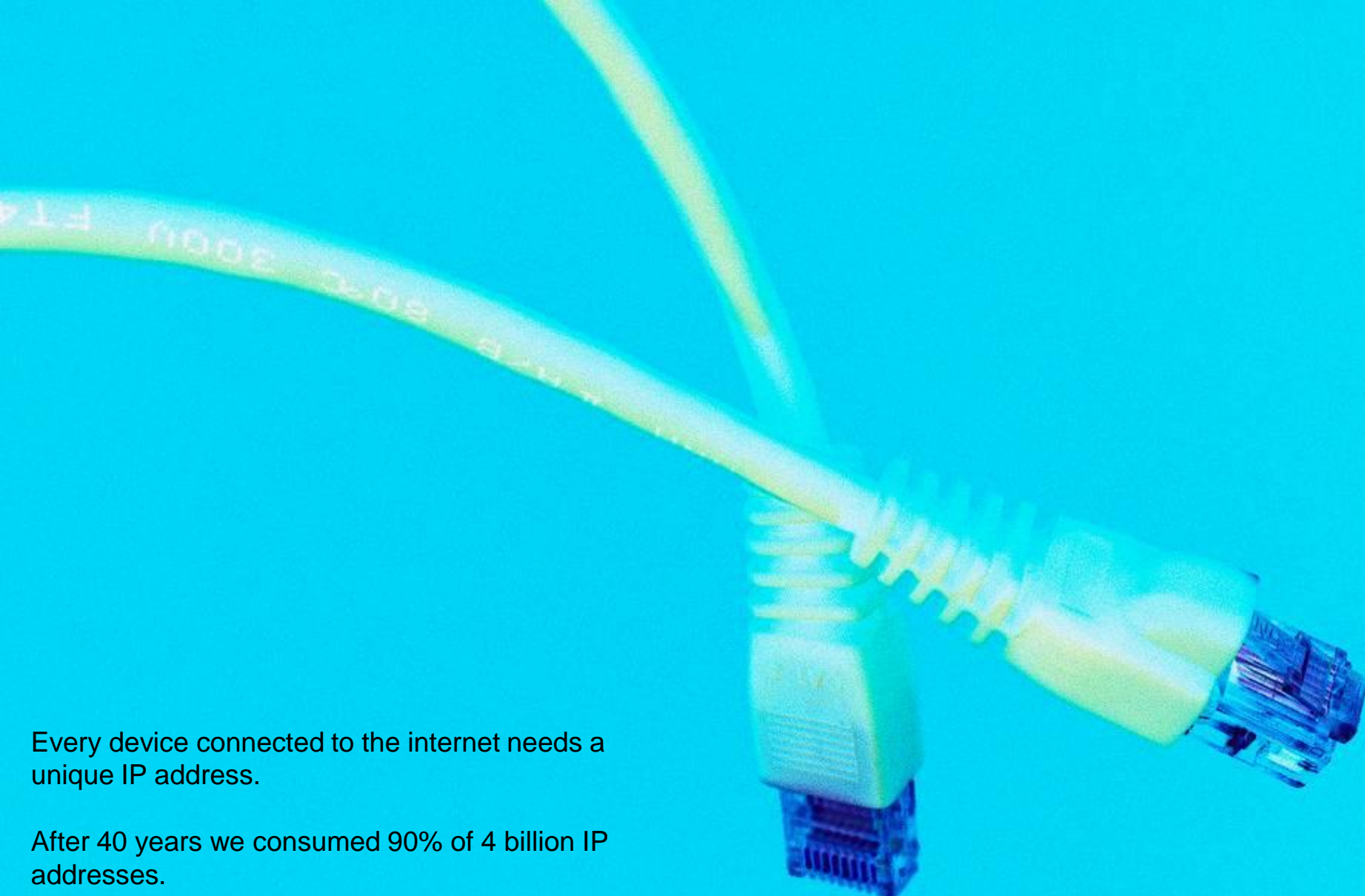
Shift towards chronic illness

Deaths (millions)



Worldwide cause of death is shifting towards non-communicable diseases and accidents and away from infectious disease (Source: WHO, 2008; p8)

***i* World**
Digital and
natural
convergence



Every device connected to the internet needs a unique IP address.

After 40 years we consumed 90% of 4 billion IP addresses.

A new system is planned which can accommodate 3.4×10^{38} unique addresses.

The number of transistors that can be placed on an integrated circuit, at the same cost, doubles every 1.5 years.

Data source: Moore's Law, Moore (1965) Electronica, Vol 38
Image source: Microsoft clipart



i World

Digital and natural convergence



World's First Augmented Reality Browser



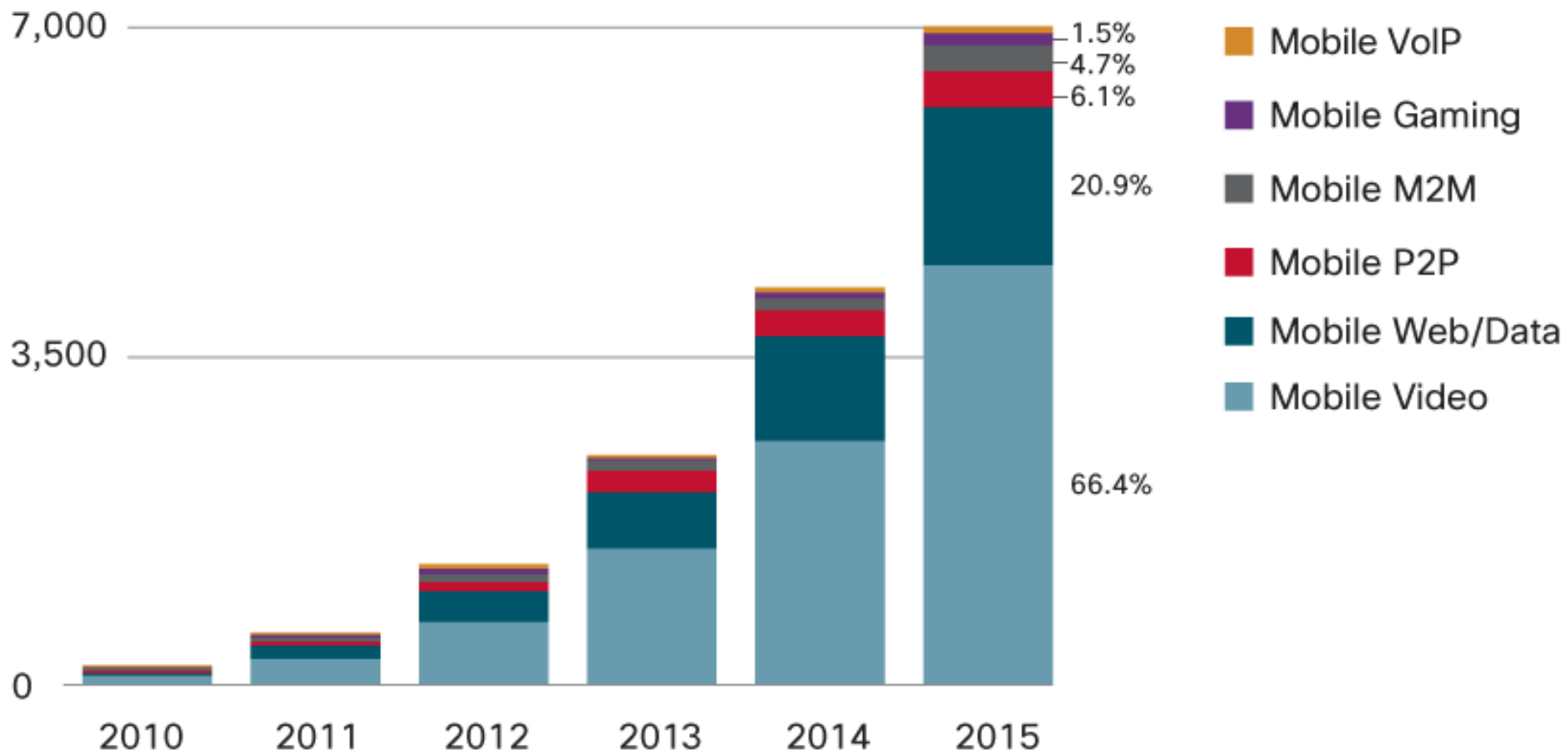
Last year's mobile data traffic was three times the size of the entire global Internet in 2000

There are 48 million people in the world who have mobile phones, even though they do not have electricity at home.

Mobile Data Traffic

Petabytes per Month

92% CAGR 2010-2015



VoIP traffic forecasted to be 0.4% of all mobile data traffic in 2015.

Source: Cisco VNI Mobile, 2011

Thank you

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