Ageing Society in Developed Countries Challenges Carbon Mitigation
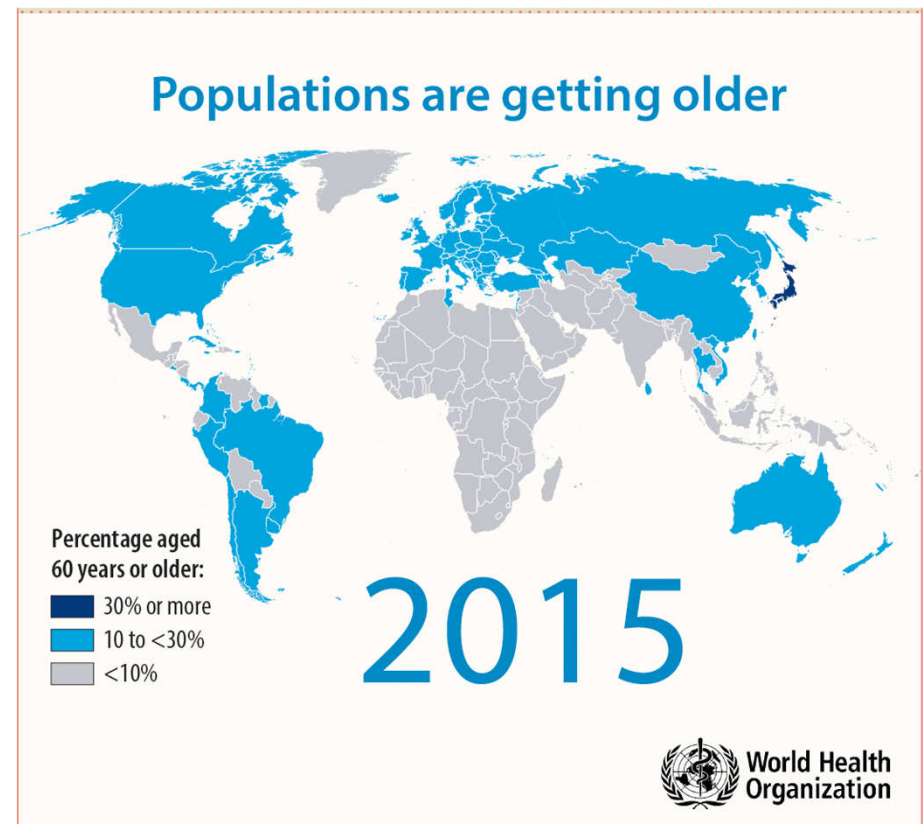
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EGU European Geosciences Union

2019
1.0 billion
13.2 %
of total worldwide population

2030
1.4 billion
16.5 %
of total worldwide population

2050
2.1 billion
21.4 %
of total worldwide population

Source: UNDESA Population Division, World Population Prospects, 2019.
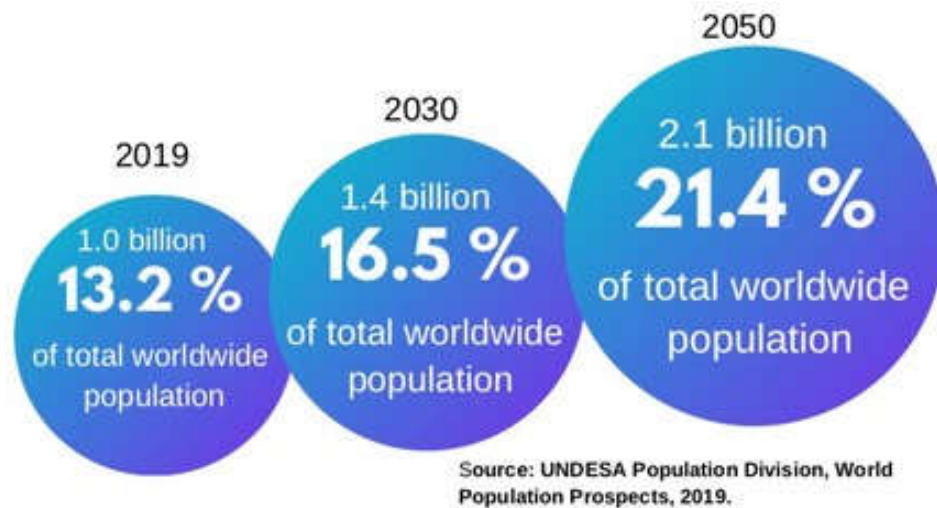
- **People live longer and healthier**
- **a lower birth rate**

Populations are getting older

Percentage aged 60 years or older:
- 30% or more
- 10 to <30%
- <10%

2015

World Health Organization

Household Expenditure Survey (HBS)

Age groups: *<30, 30-45, 45-60, 60+*

Year: *2005, 2010, 2015;*

Countries: *32 developed countries*

Global supply chain model (EXIOBASE)

Rising share of carbon footprint of the elderly

- The rising trend is ongoing for all countries

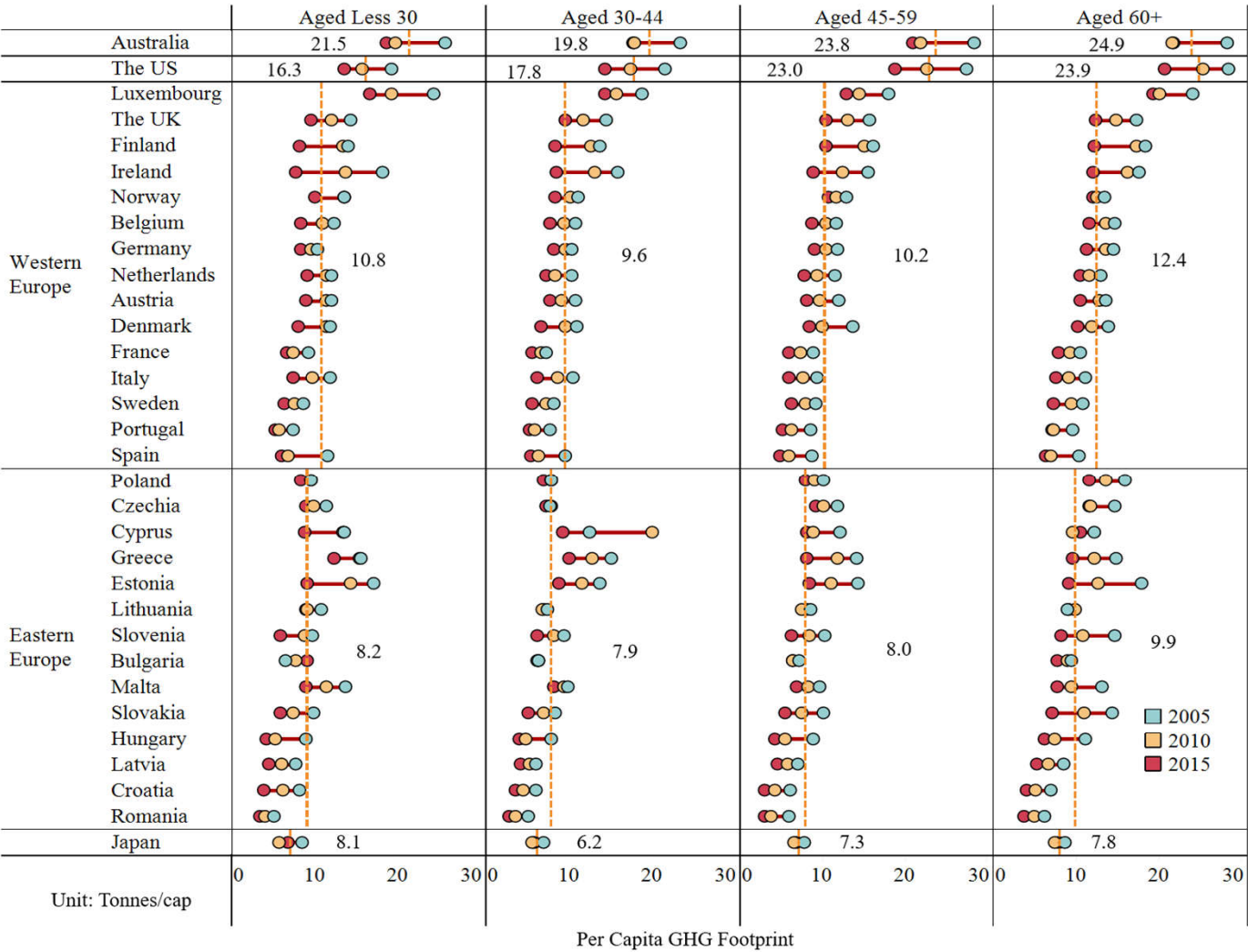- Japan is outstanding, followed by Eastern European countries
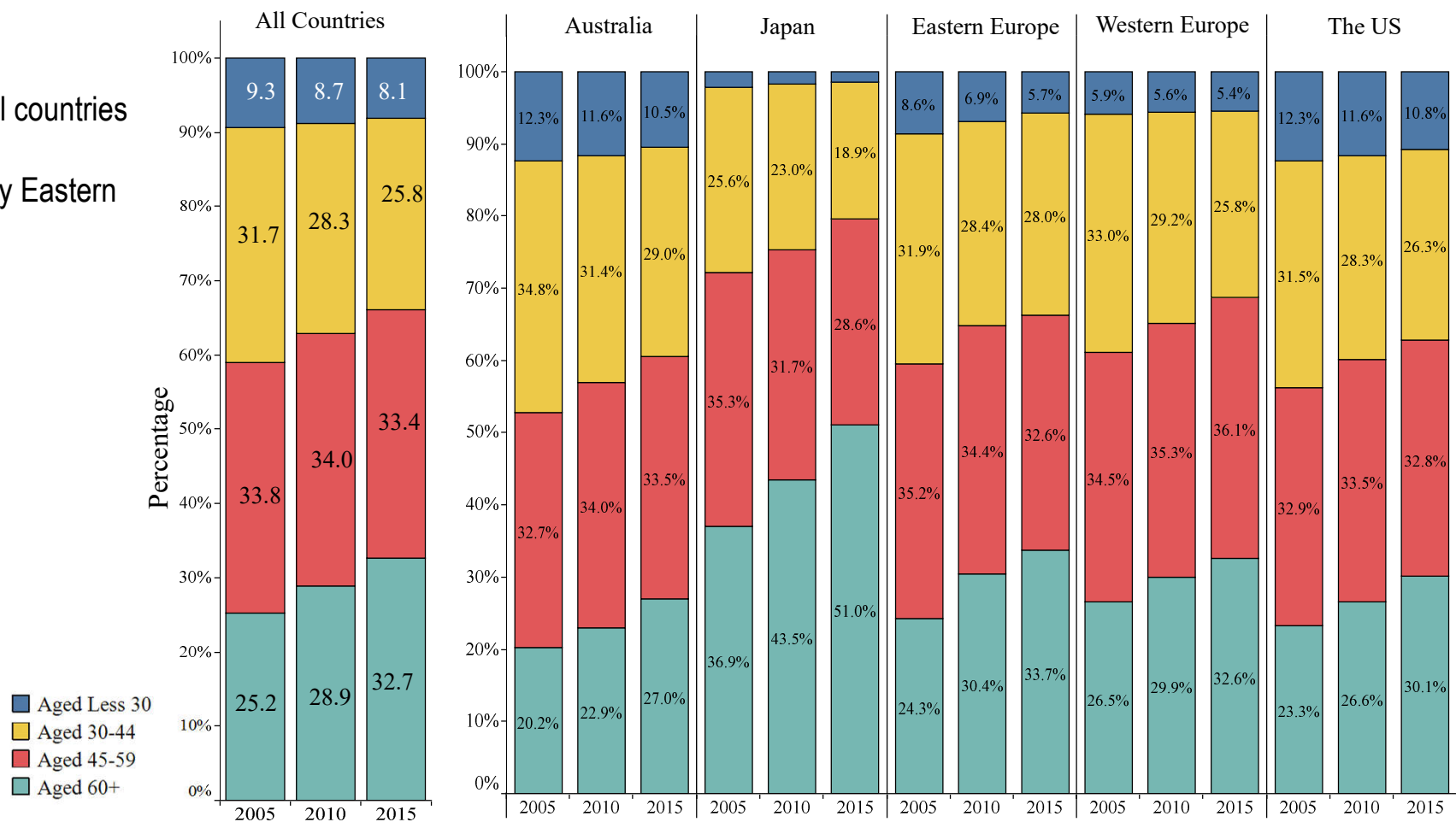
Higher Per capita GHG footprints by the aged group

After adjusting by population:

- Aged group has the highest per capita carbon footprint

- Australia and the US has the highest per capita carbon footprint for the elderly, almost twice the global average.

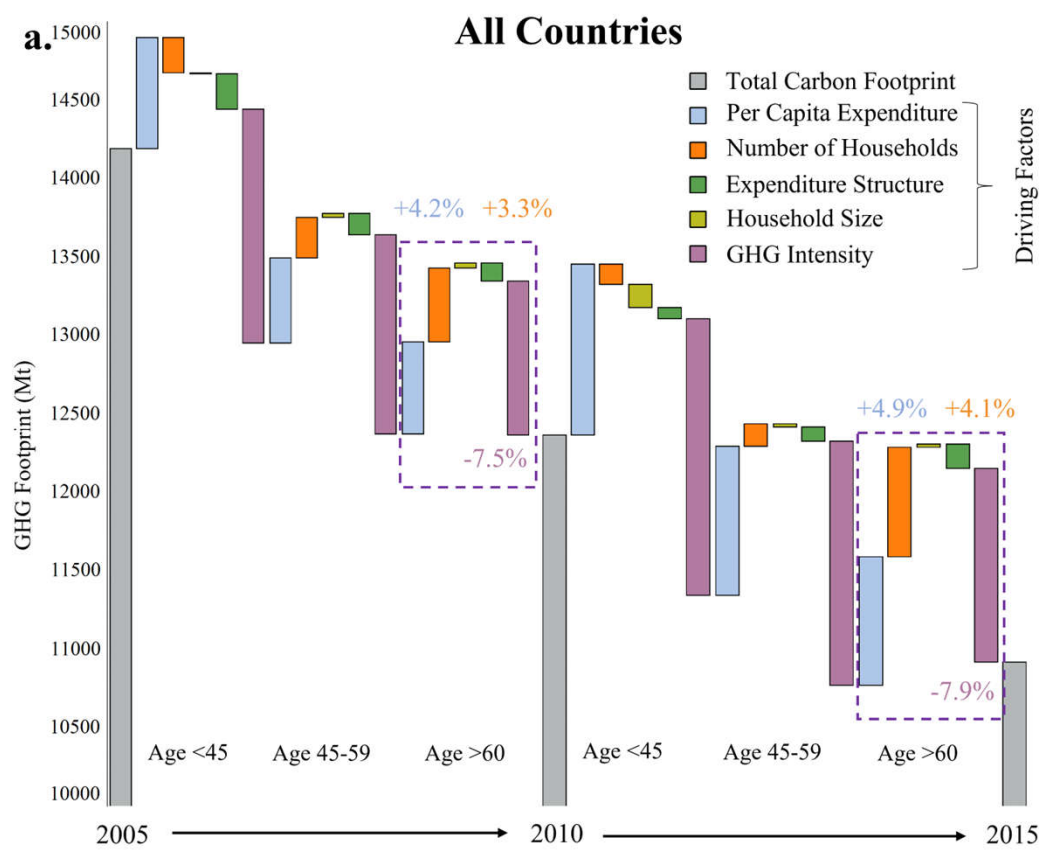- Alluance and industrial strucutrue (energy strucuture) are factors

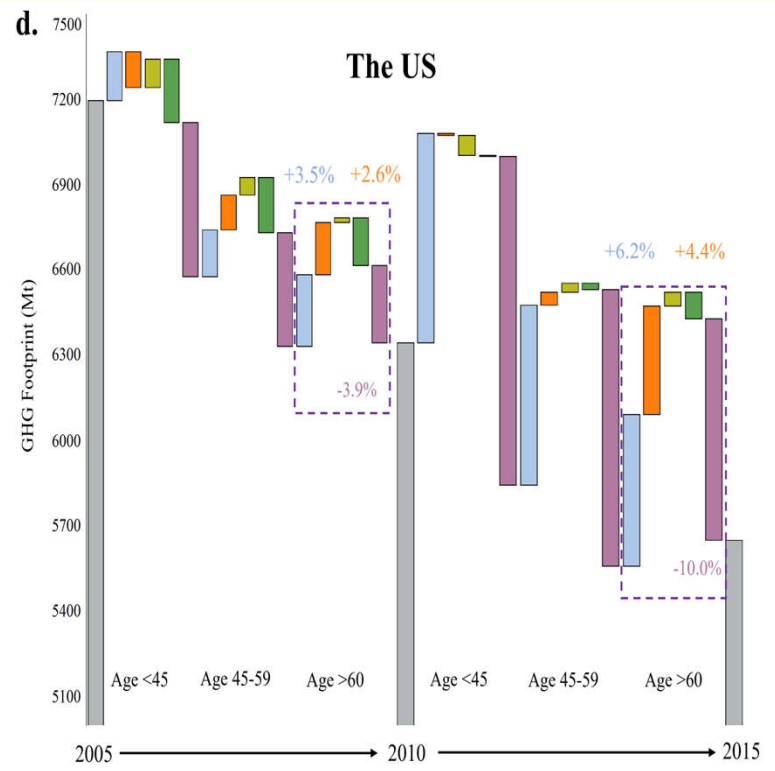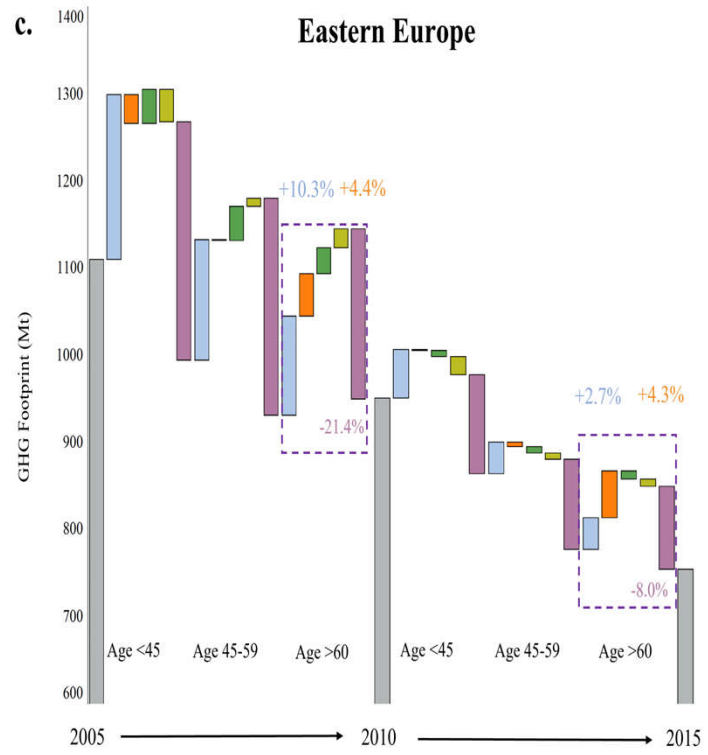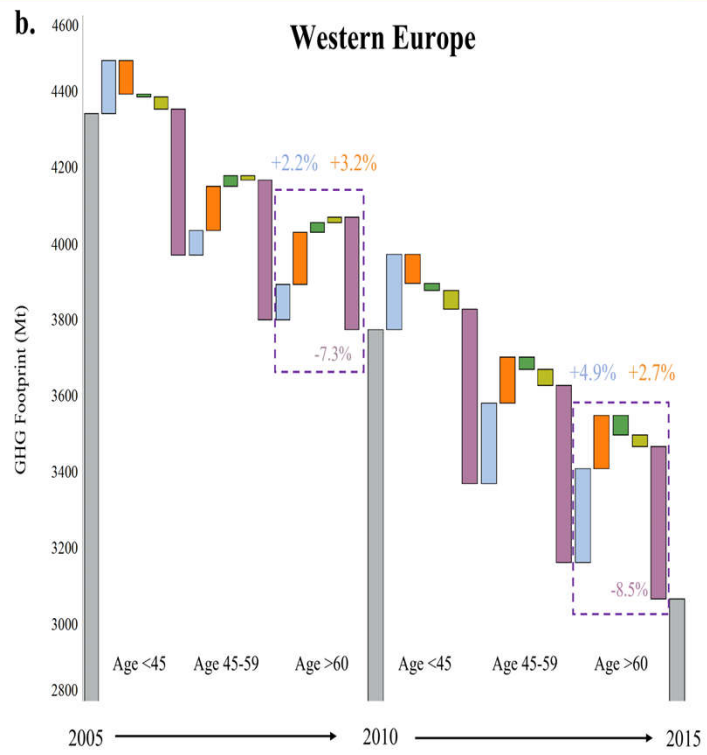Per Capita GHG Footprint

Unit: Tonnes/cap

Decomposition Analysis

GHG intensity reduction is the key declining factor

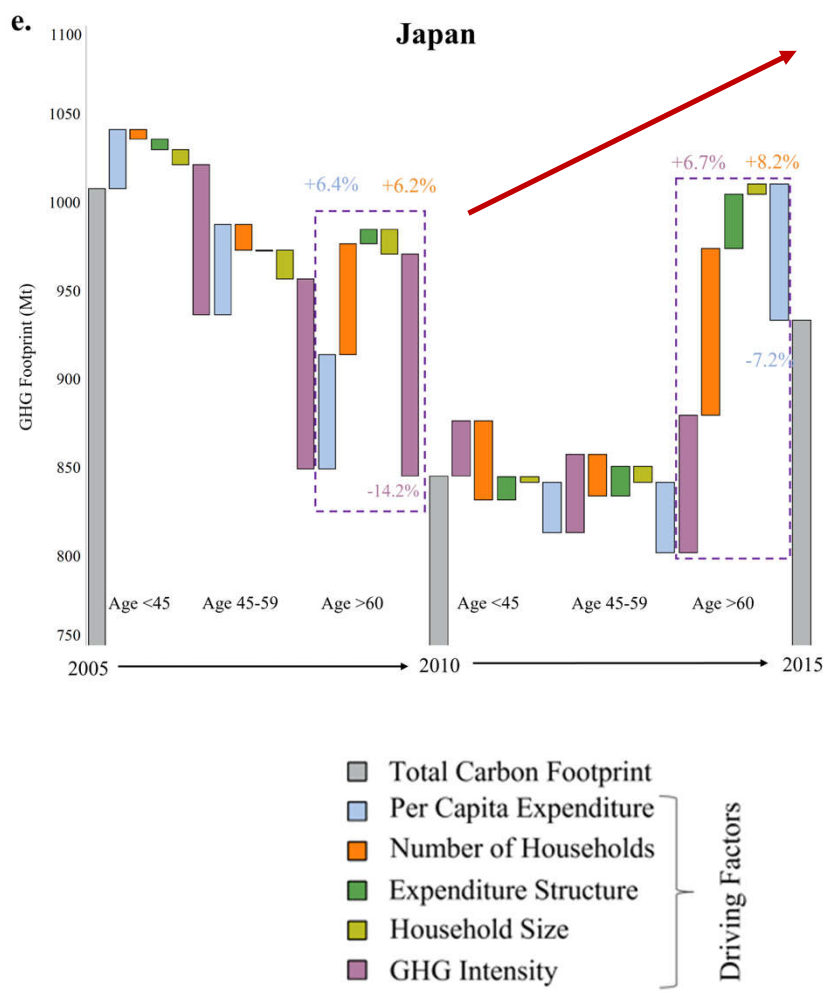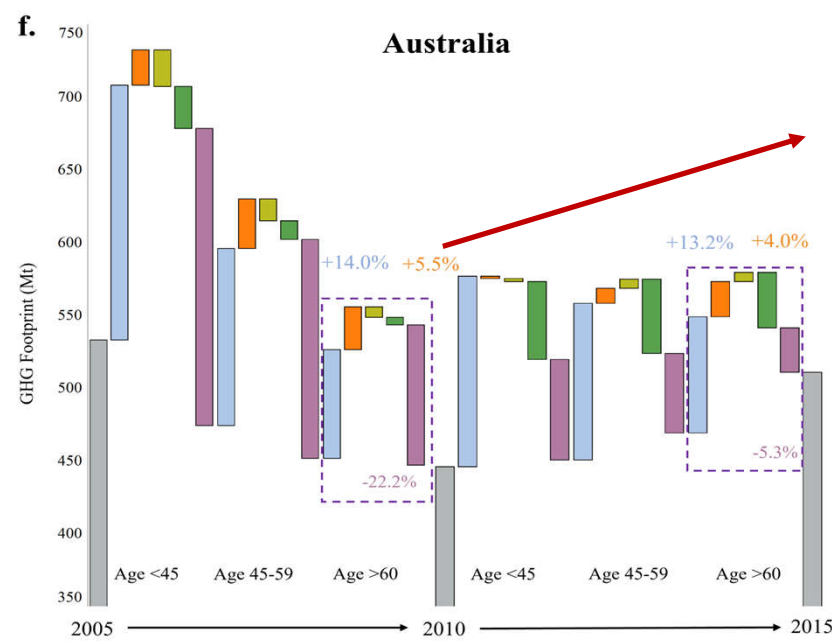**Growing aged household** and **rising expenditure** are key driving factors

Higher Consumption driving up carbon footprint

- Pattern has been observed in most countries

Alarming pattern in Japan and Australia

- During 2010-2015, Intensity become a driving factor in Japan.

- East Japan earthquake in 2011

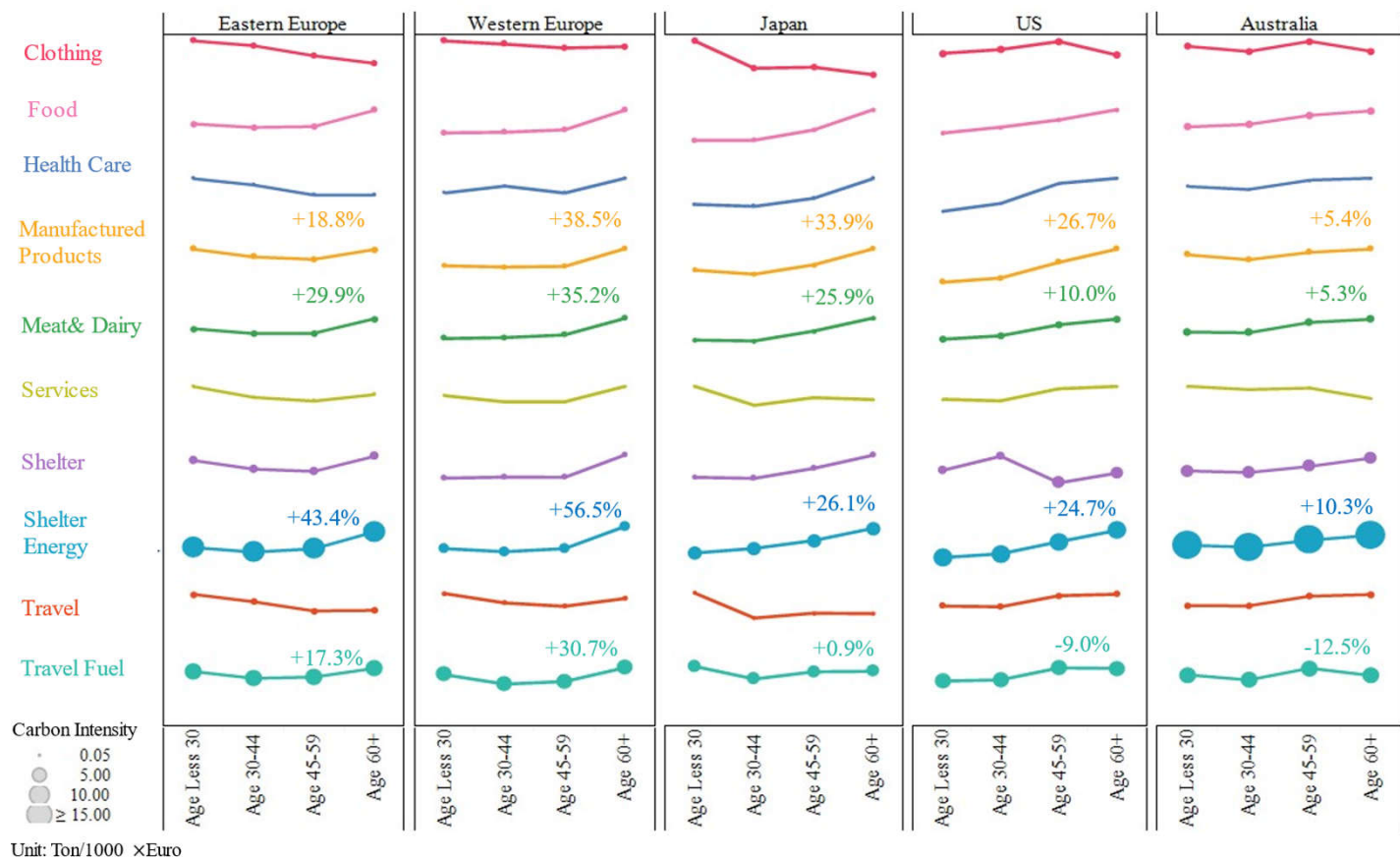- Stagnation of mitigation policy in Australia

Rising expenditures for the aged group.

Aged household:

high expenditure on carbon-intensive products:

- Shelter energy
- Travel Fuel

- Lifestyle pattern change
- Low energy efficiency in Old house
- More driving to access to services

Wealth is related to high expenditure

- The wealth of the aged group was significantly associated with the rising spending.

- the lowest wealth elasticity of expenditure implied the high expenditure is rigid.

- last longer with the wealth gradually shrinking.

Age groups	Less 30		30-44		45-59		60+	
	Elasticity	R^2	Elasticity	R^2	Elasticity	R^2	Elasticity	R^2
Total	-0.001	0.00	0.647[a]	0.57	0.635[a]	0.85	0.501[a]	0.84
Food	0.004	0.00	0.441[a]	0.30	0.409[a]	0.41	0.336[a]	0.44
Meat Dairy	0.002	0.00	0.401[a]	0.52	0.383[a]	0.70	0.294[a]	0.74
Clothing	0.004	0.02	0.574[a]	0.61	0.461[a]	0.60	0.355[a]	0.52
Shelter	0.013	0.01	0.555[a]	0.29	0.415[a]	0.28	0.335[a]	0.26
Shelter Energy	0.006	0.00	0.505[a]	0.29	0.515[a]	0.45	0.414[a]	0.45
Travel	-0.002	0.00	0.677[a]	0.54	0.645[a]	0.77	0.528[a]	0.77
Travel Fuel	-0.003	0.01	0.660[a]	0.42	0.617[a]	0.62	0.457[a]	0.58
Manufactured products	0.008	0.00	0.626[a]	0.59	0.586[a]	0.73	0.455[a]	0.74
Services	-0.005	0.00	0.750[a]	0.53	0.758[a]	0.85	0.605[a]	0.84
Health Care	0.005	0.00	0.960[a]	0.50	0.893[a]	0.68	0.680[a]	0.63

[a] denotes significance at 1% level

Thanks for Your Attention

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