

Food and nutrition security in Asia and the Pacific region, and emerging regional food security scenarios

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Definition of food security

- “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food” – World Food Summit 1996

→ **Four dimensions:**

- Availability
- Accessibility
- Stability
- Utilization

Food availability

- Sufficient quantities of food of appropriate qualities, supplied through domestic production or imports
- Available in a country, in the right place at the right time with mechanism(s) for ensuring right quality food

Accessibility

- Adequate **resources** (**entitlements**) to acquire appropriate food for a nutritious diet

Resources: Monetary / non-monetary (rural settings: common property resources)

Entitlements: Command over commodity bundles given legal, political, economic and social arrangements of the community

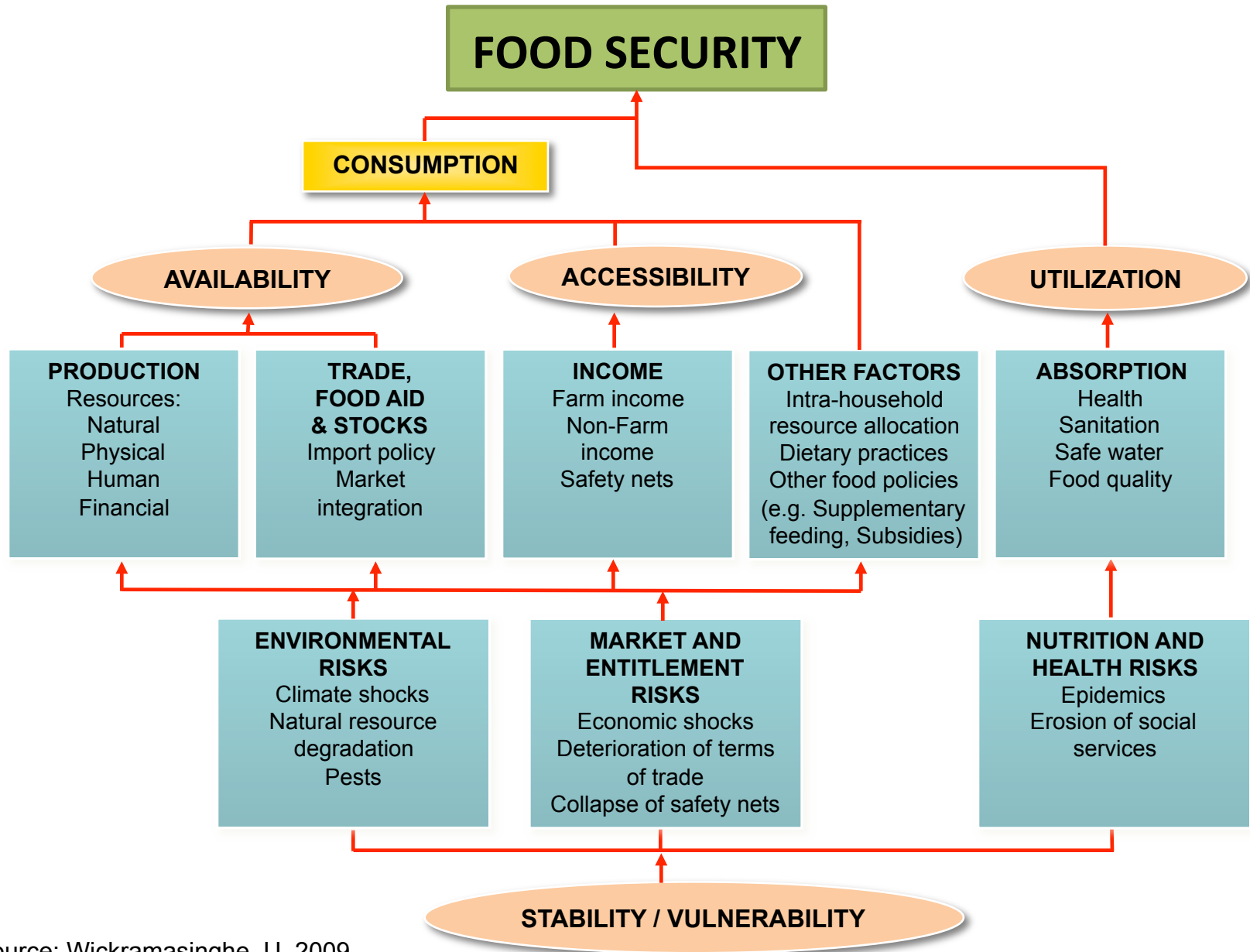
Food utilization

Utilization of food through adequate diet, clean water, sanitation, and health care (non-food inputs in food security)

Stability

- Access to food not falling below a minimum required for a healthy life

Food security – Four dimensions



BLACK BOX

Food security Indicators

AVAILABILITY	STABILITY
Average dietary energy supply adequacy	Cereal import dependency ratio
Average value of food production	Percent of arable land equipped for irrigation
Share of dietary energy supply derived from cereals, roots and tubers	Value of food imports over total merchandise exports
Average protein supply	Political stability and absence of violence/terrorism
Average supply of protein of animal origin	Domestic food price volatility
	Per capita food production variability
	Per capita food supply variability
ACCESS	UTILIZATION
Percent of paved roads over total roads	Access to improved water sources
Road density	Access to improved sanitation facilities
Rail lines density	Percentage of children under 5 years of age affected by wasting
Gross domestic product per capita (in purchasing power equivalent)	Percentage of children under 5 years of age who are stunted
Domestic food price index	Percentage of children under 5 years of age who are underweight
Prevalence of undernourishment	Percentage of adults who are underweight
Share of food expenditure of the poor	Prevalence of anaemia among pregnant women
Depth of the food deficit	Prevalence of anaemia among children under 5 years of age
Prevalence of food inadequacy	Prevalence of vitamin A deficiency in the population
	Prevalence of iodine deficiency

ADDITIONAL USEFUL STATISTICS
Total population
Number of people undernourished
Minimum Dietary Energy Requirement (MDER)
Average Dietary Energy Requirement (ADER)
Minimum Dietary Energy Requirement (MDER) - PAL=1.75
Coefficient of variation of habitual caloric consumption distribution
Skewness of habitual caloric consumption distribution
Incidence of caloric losses at retail distribution level
Dietary Energy Supply (DES)
Average fat supply

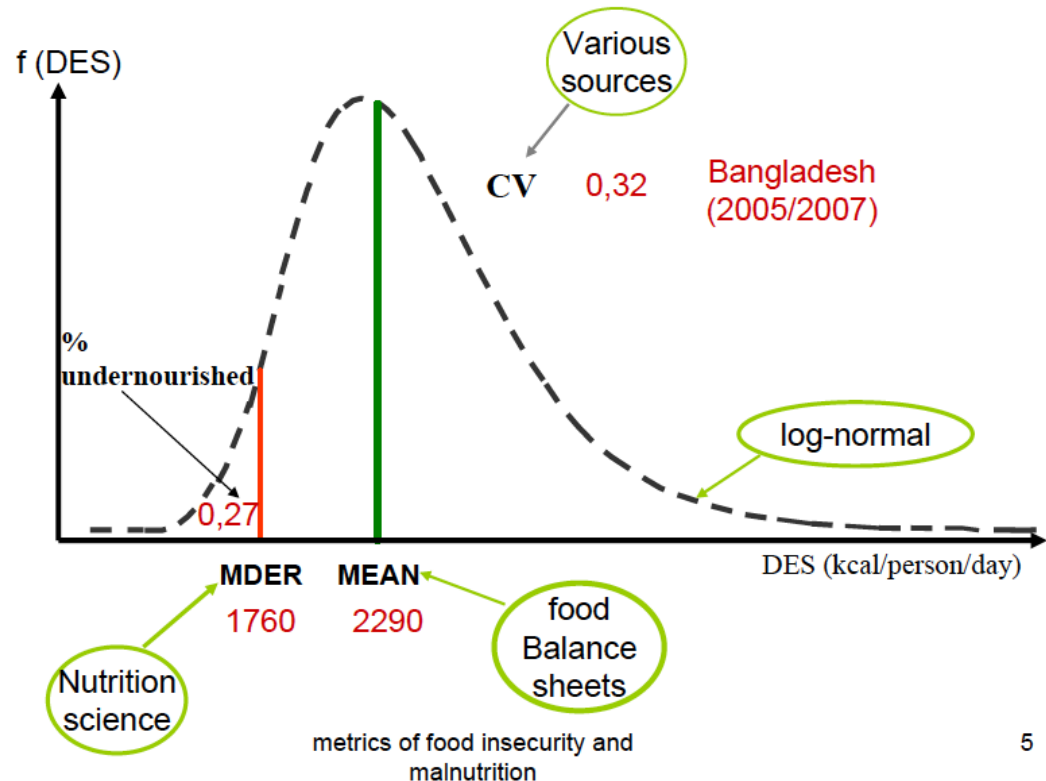
Undernourishment

Undernourishment: Refers to the status of persons whose food intake is insufficient to meet their basic energy requirements defined on the basis of physiological needs on a continuing basis

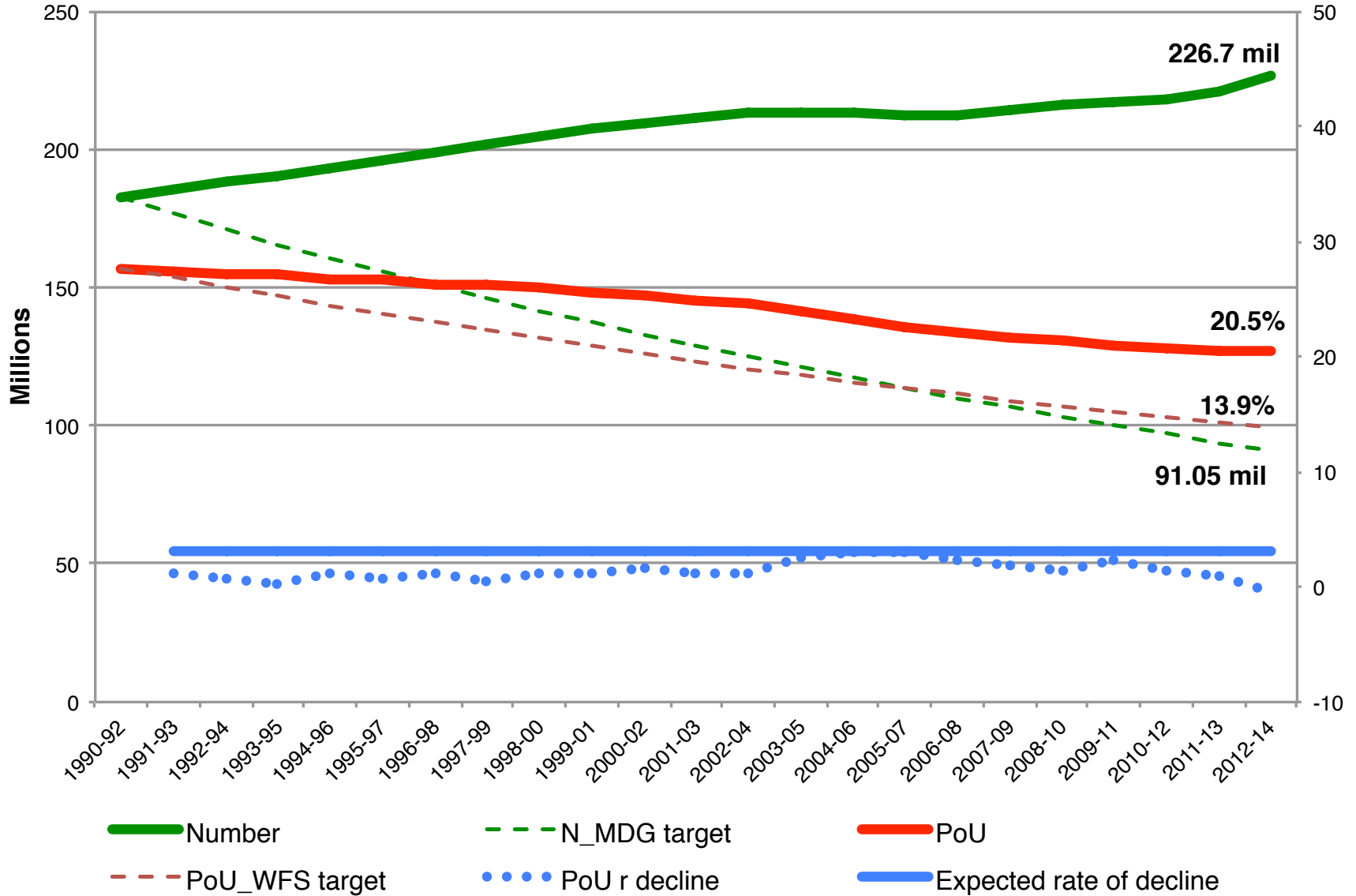
Proportion of individuals with intake below minimum requirement

$$P(U) = P(x < r) = \iint_{x < r} f(x, r) dx dr.$$

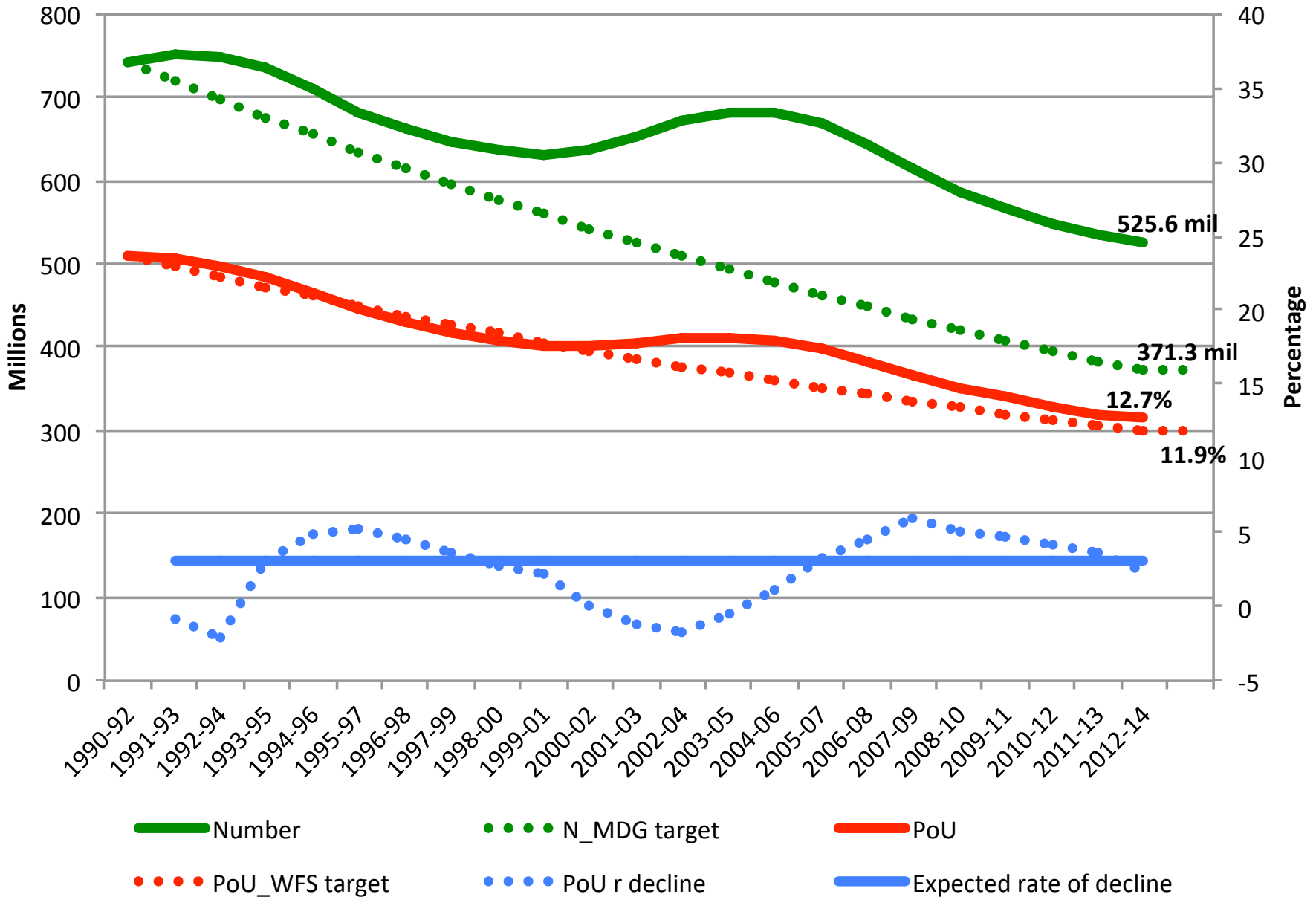
Sukhatme (1961)



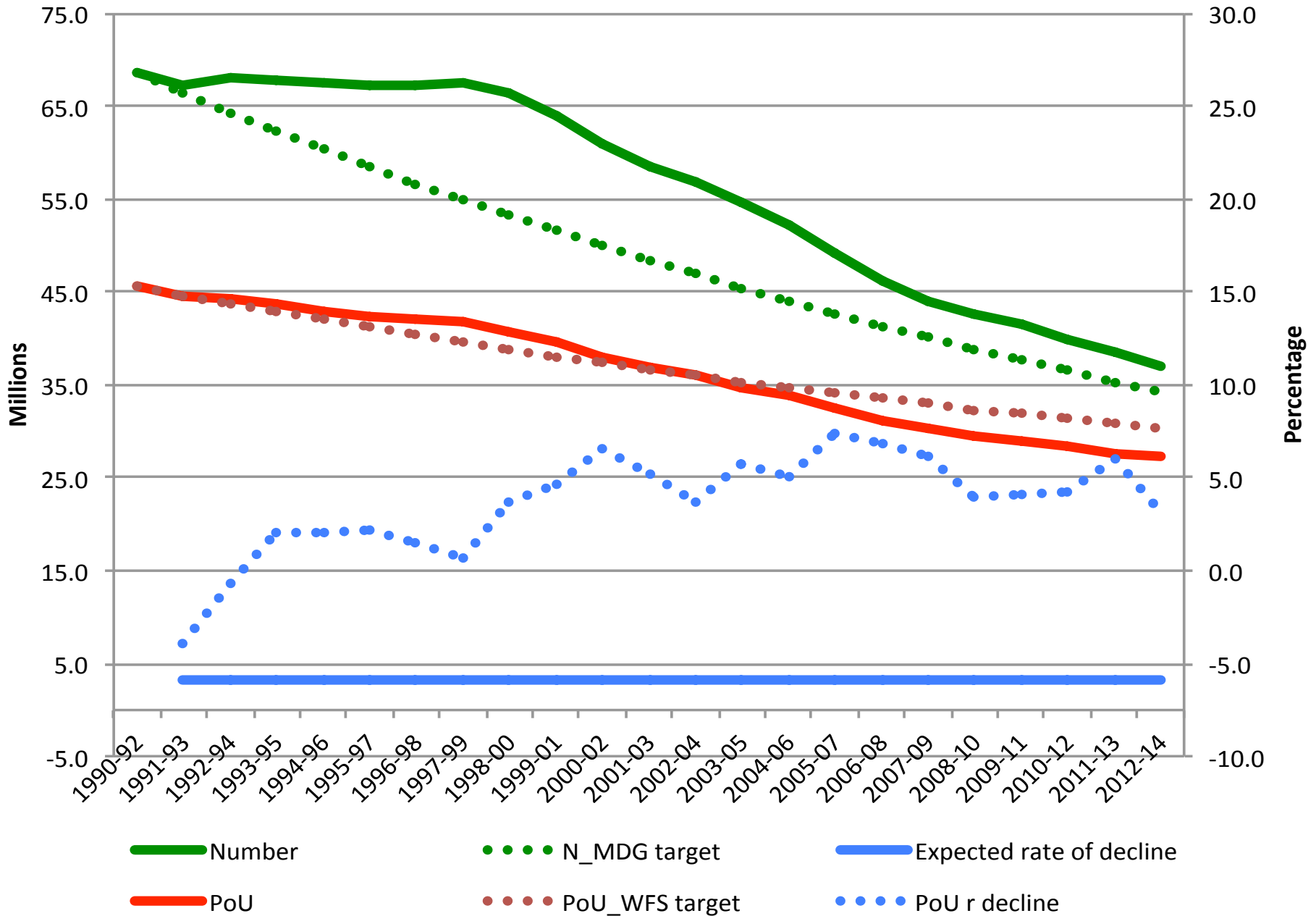
Africa



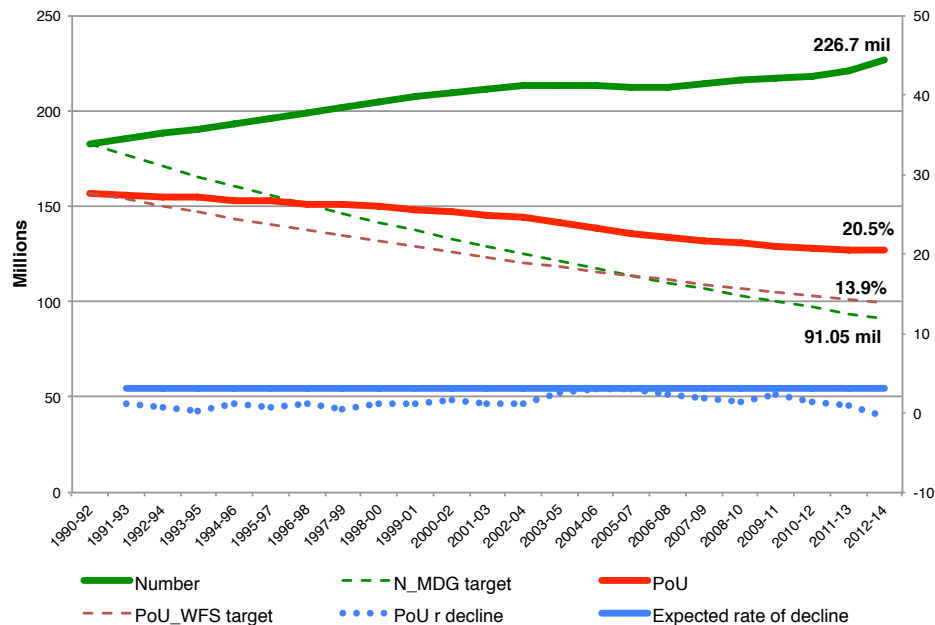
Asia



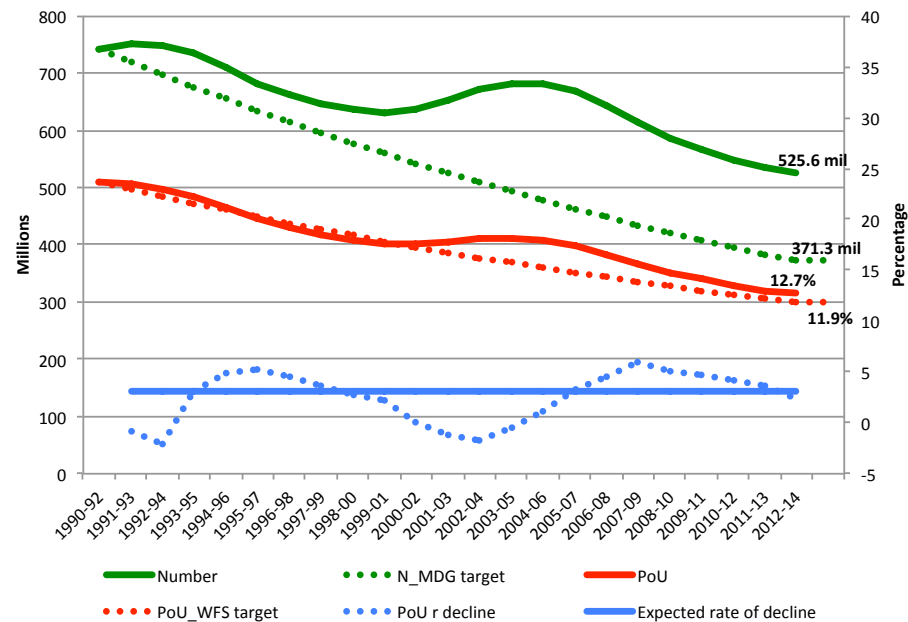
Latin America & the Caribbean



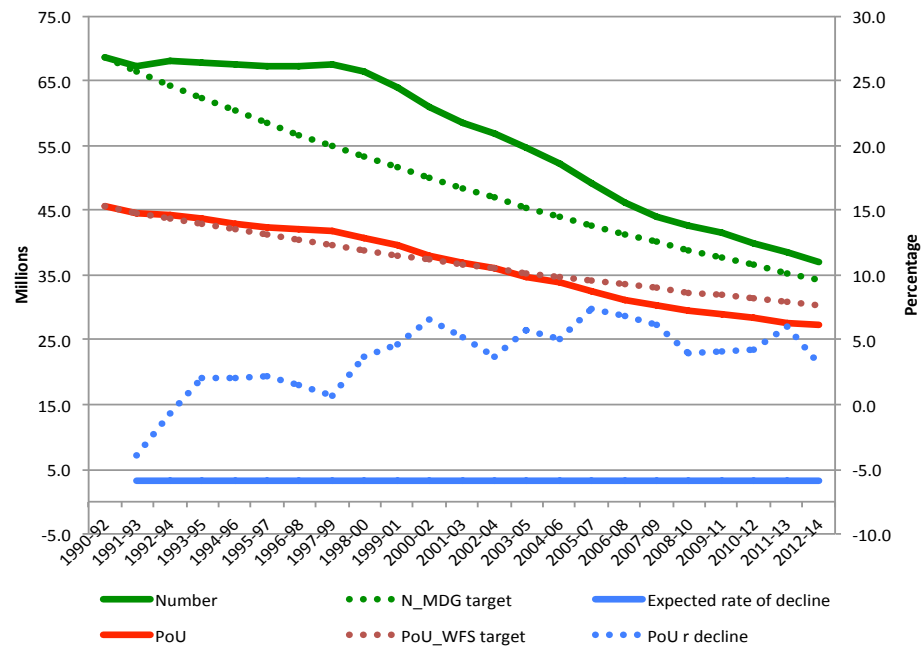
Africa



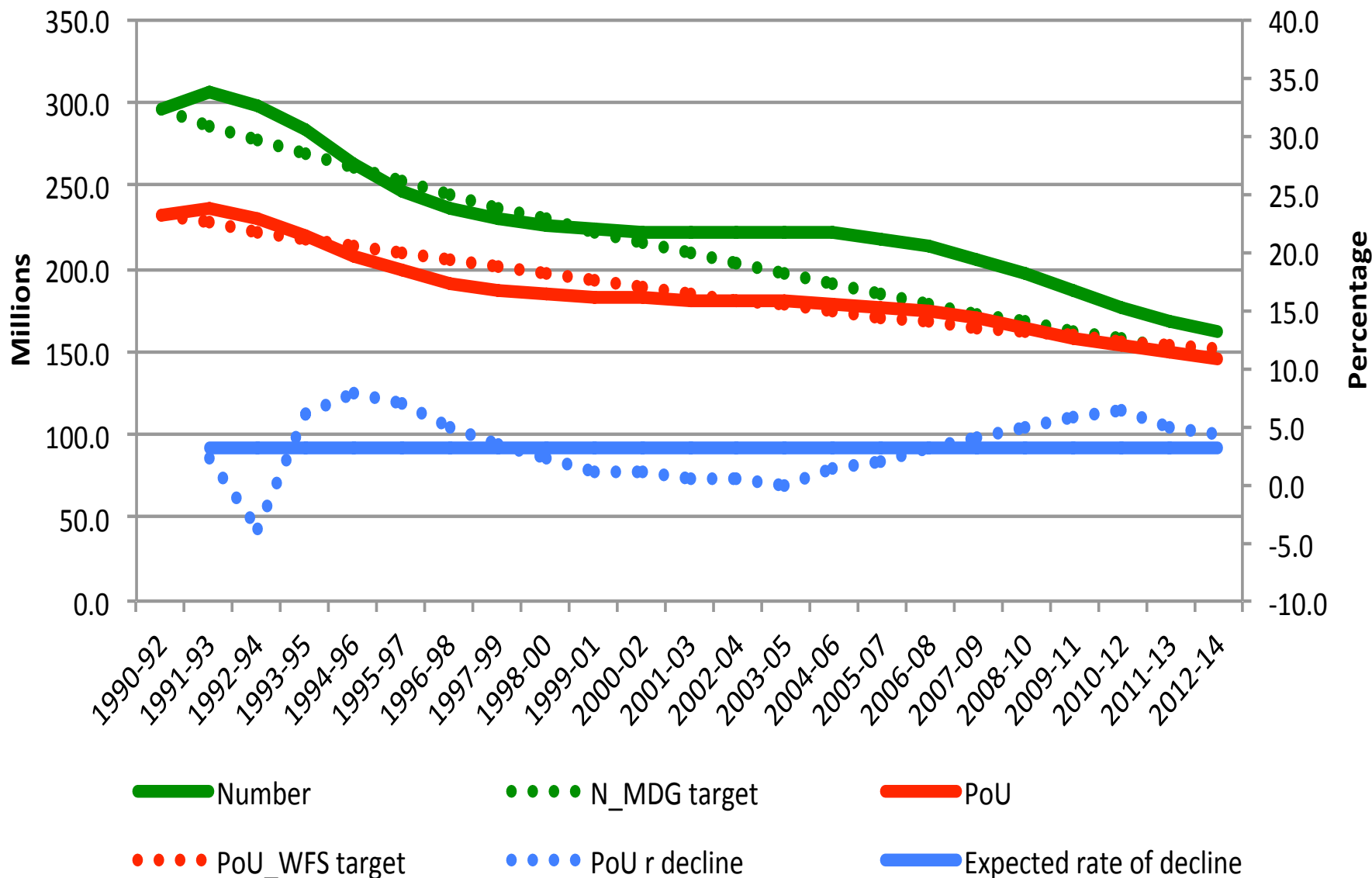
Asia



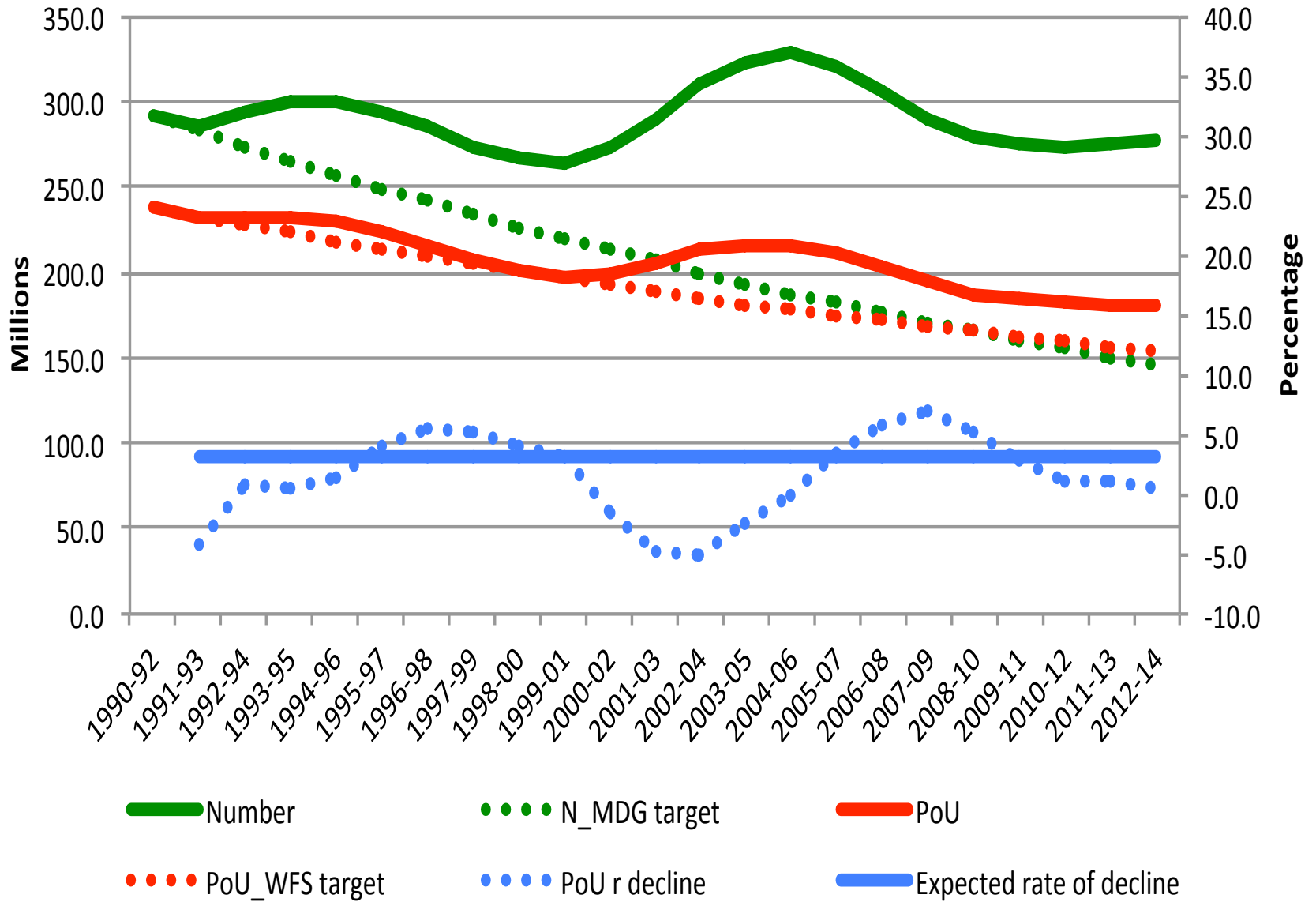
Latin America & the Caribbean



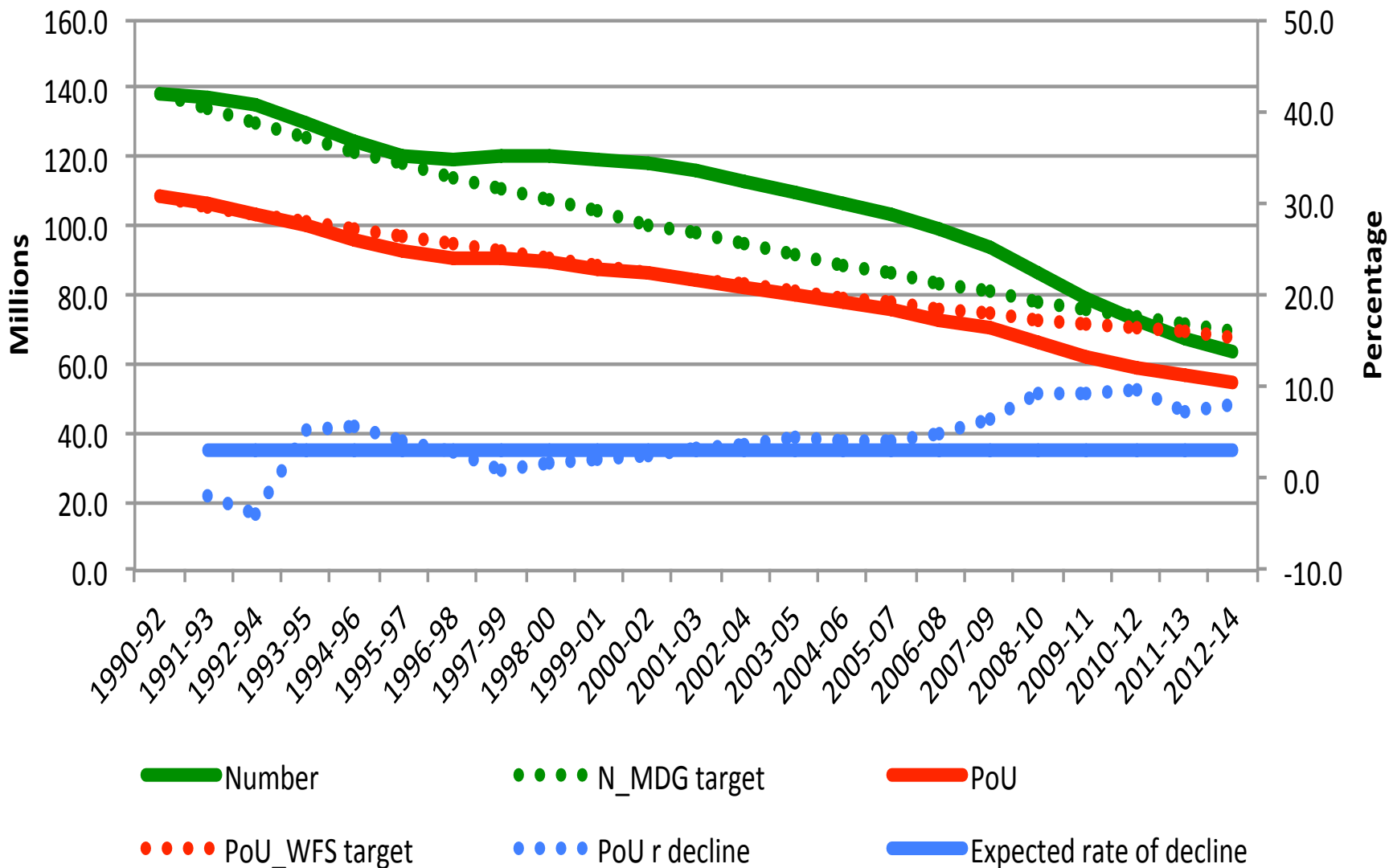
Eastern Asia



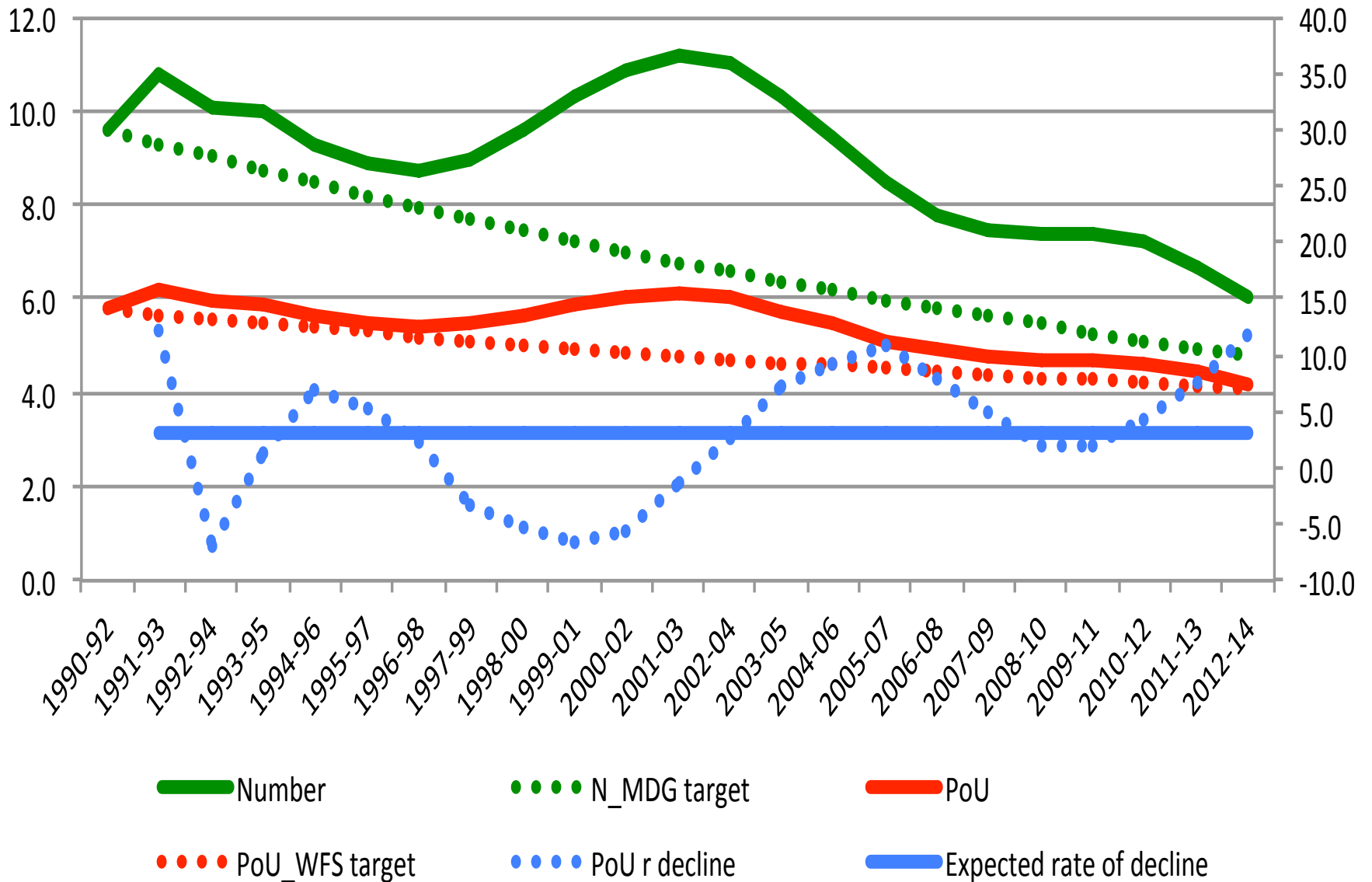
Southern Asia



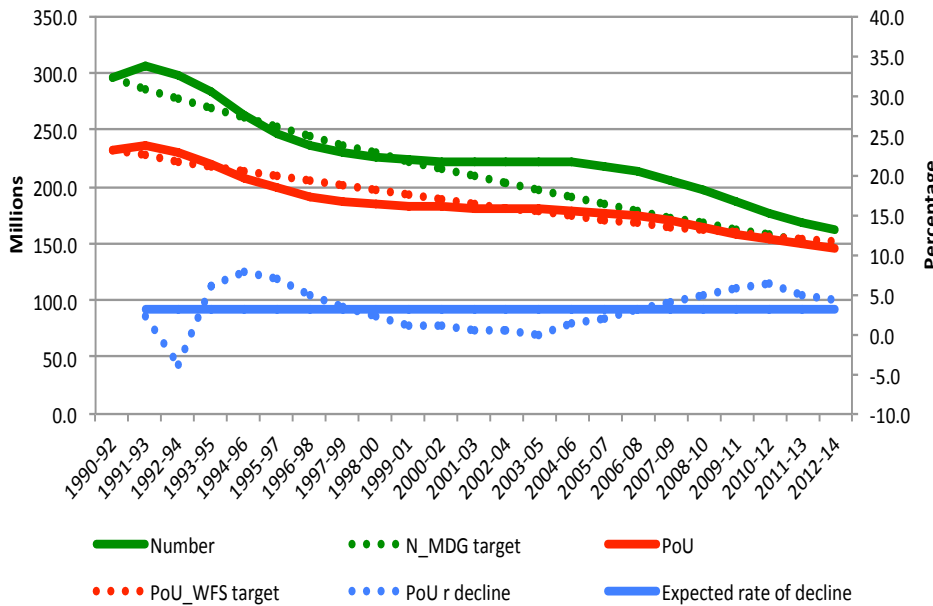
South-Eastern Asia



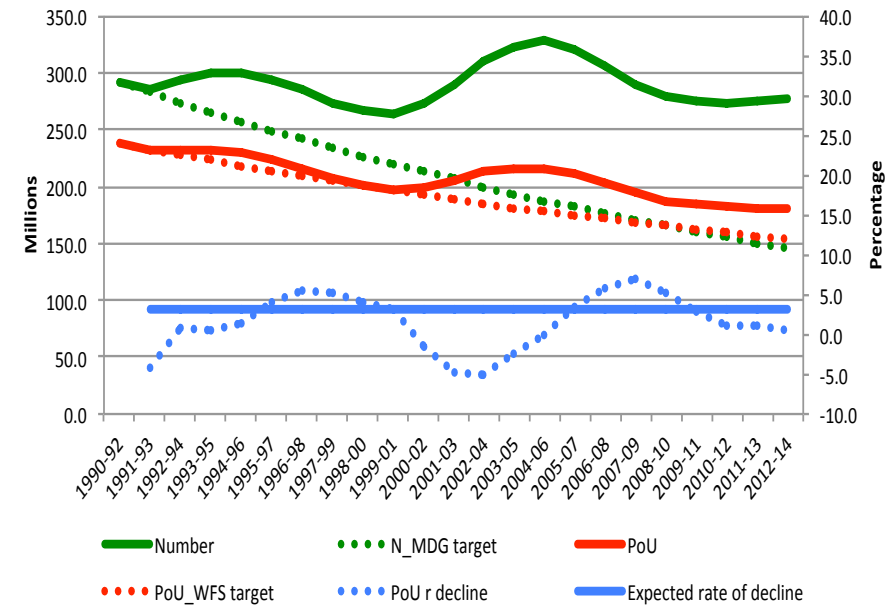
Caucasus and Central Asia



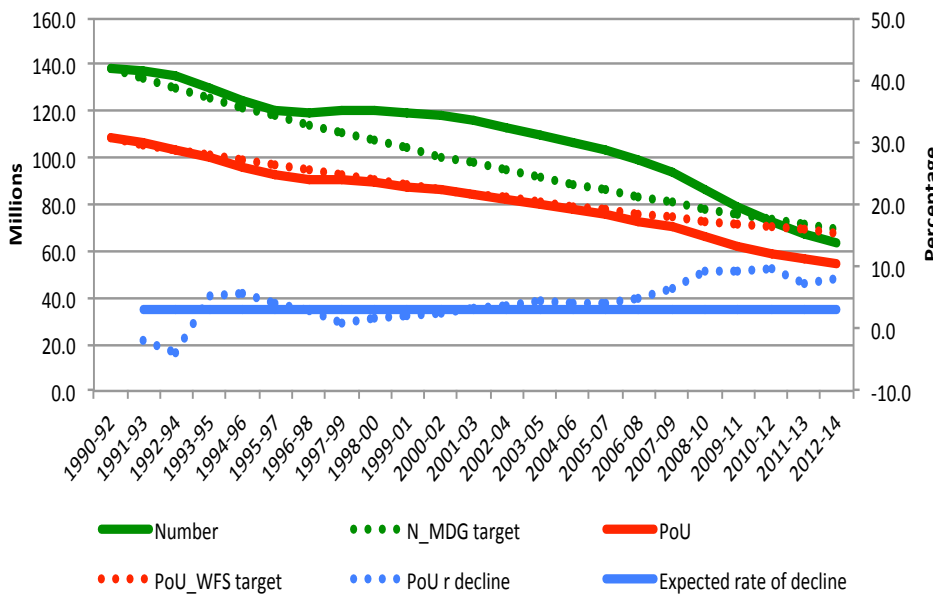
Eastern Asia



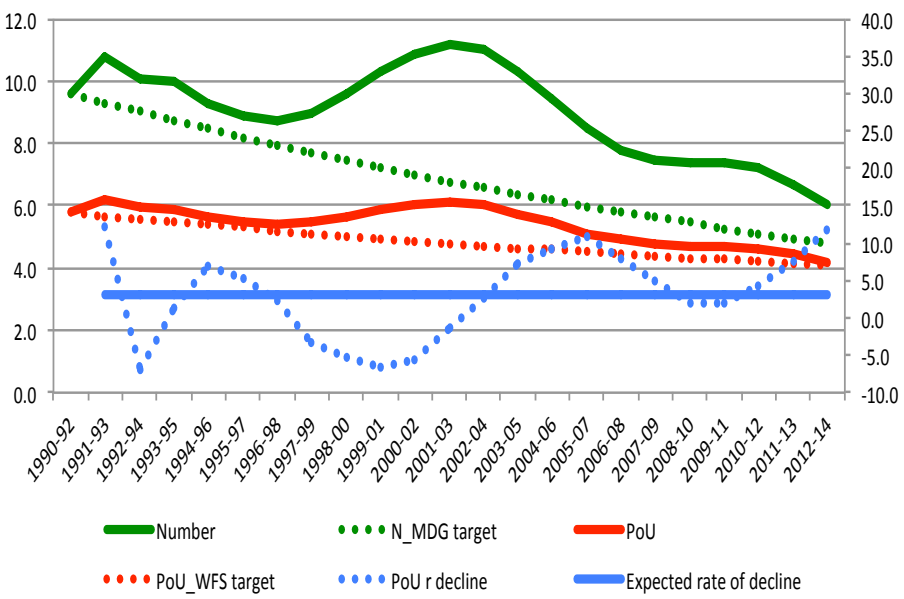
Southern Asia



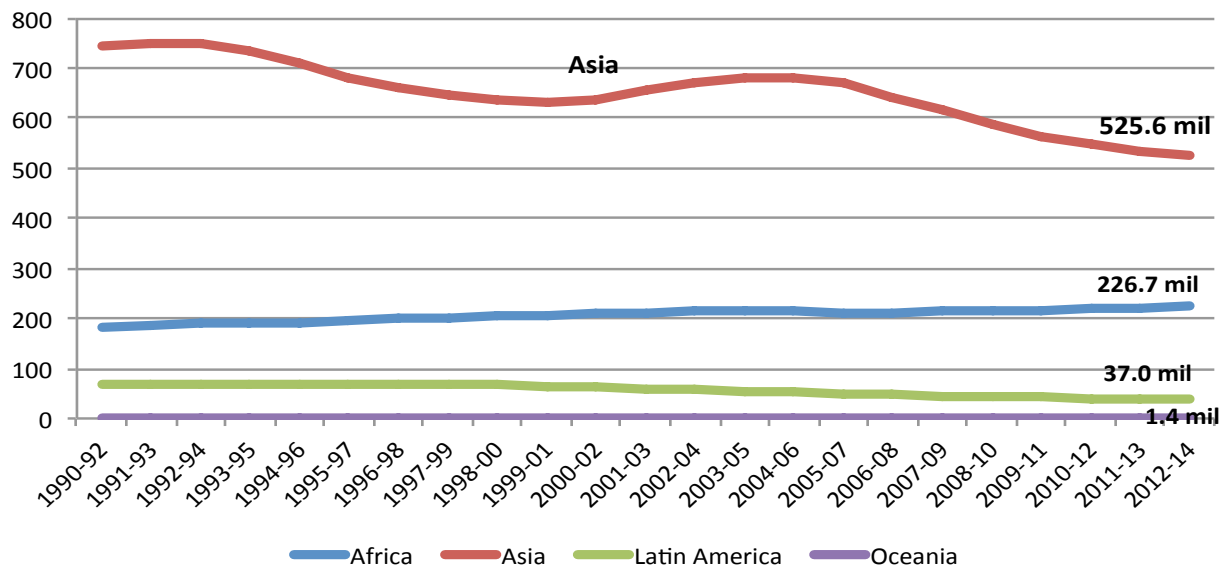
South-Eastern Asia



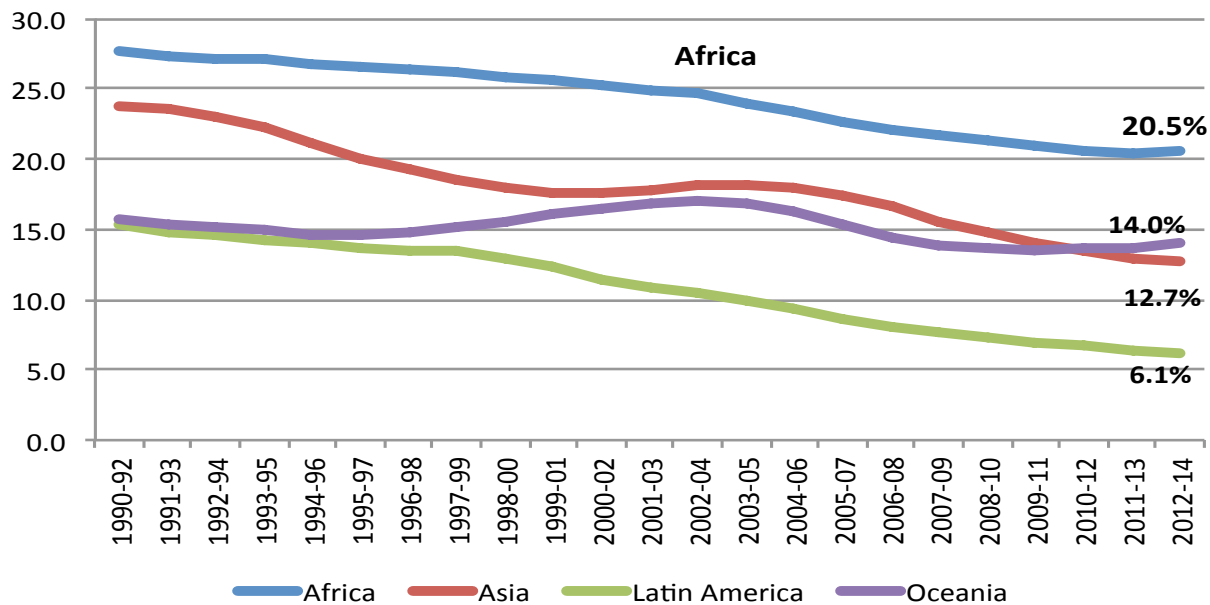
Caucasus and Central Asia



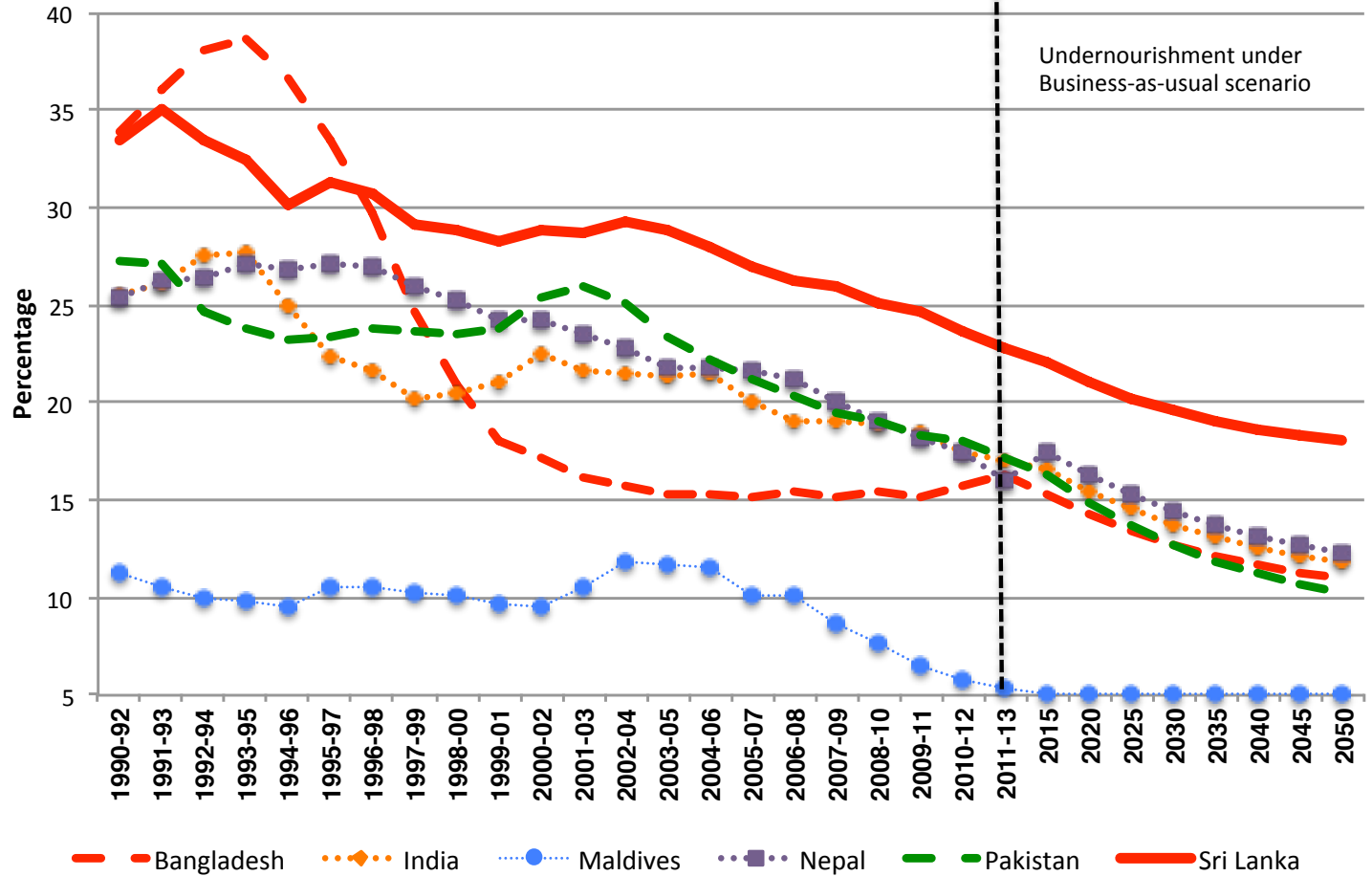
Number of undernourished (millions)



Prevalence of undernourishment (%)

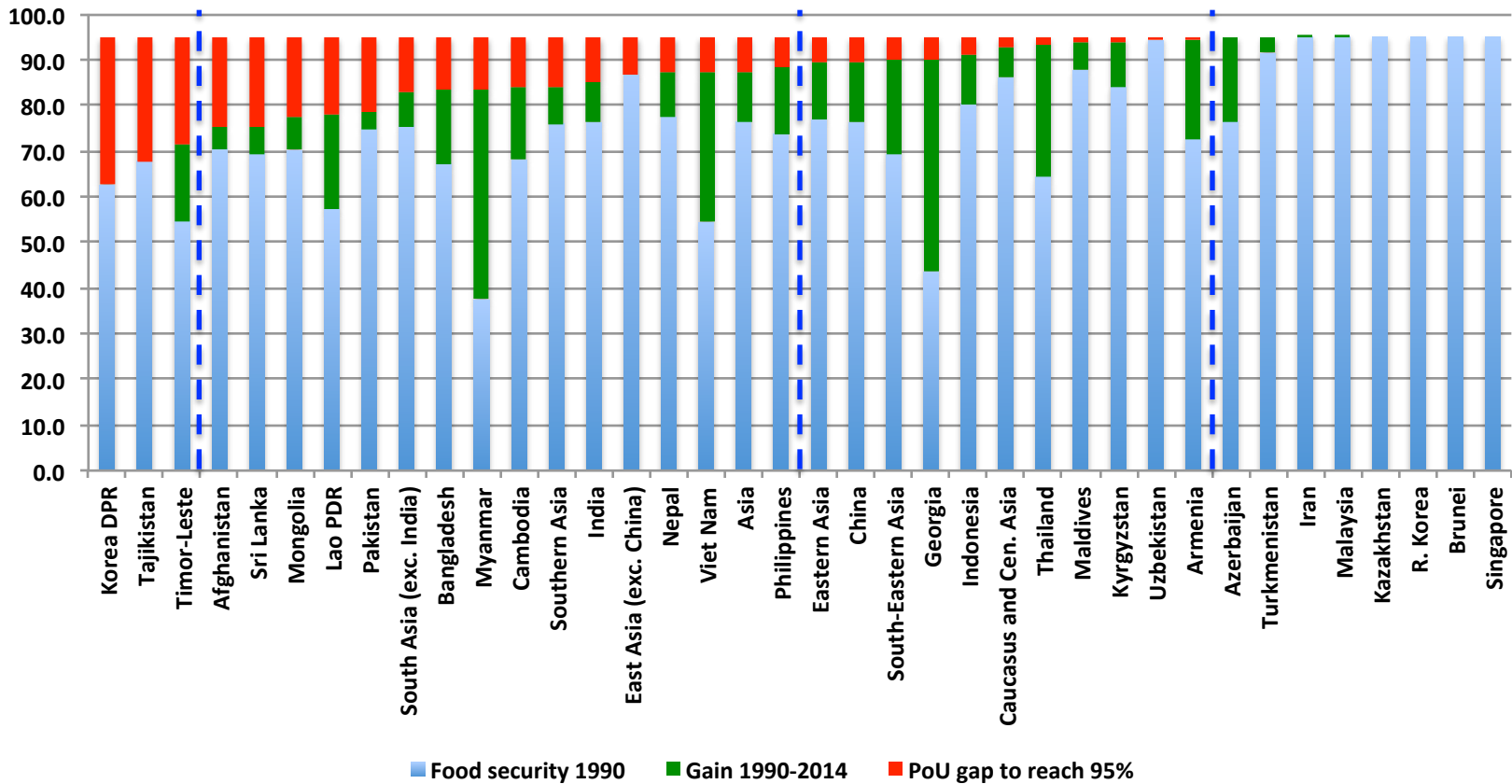


South Asia



Business-as-usual will not end hunger in South Asia

Food security 1990-92, gain during 1990-2014, & gap to 95%



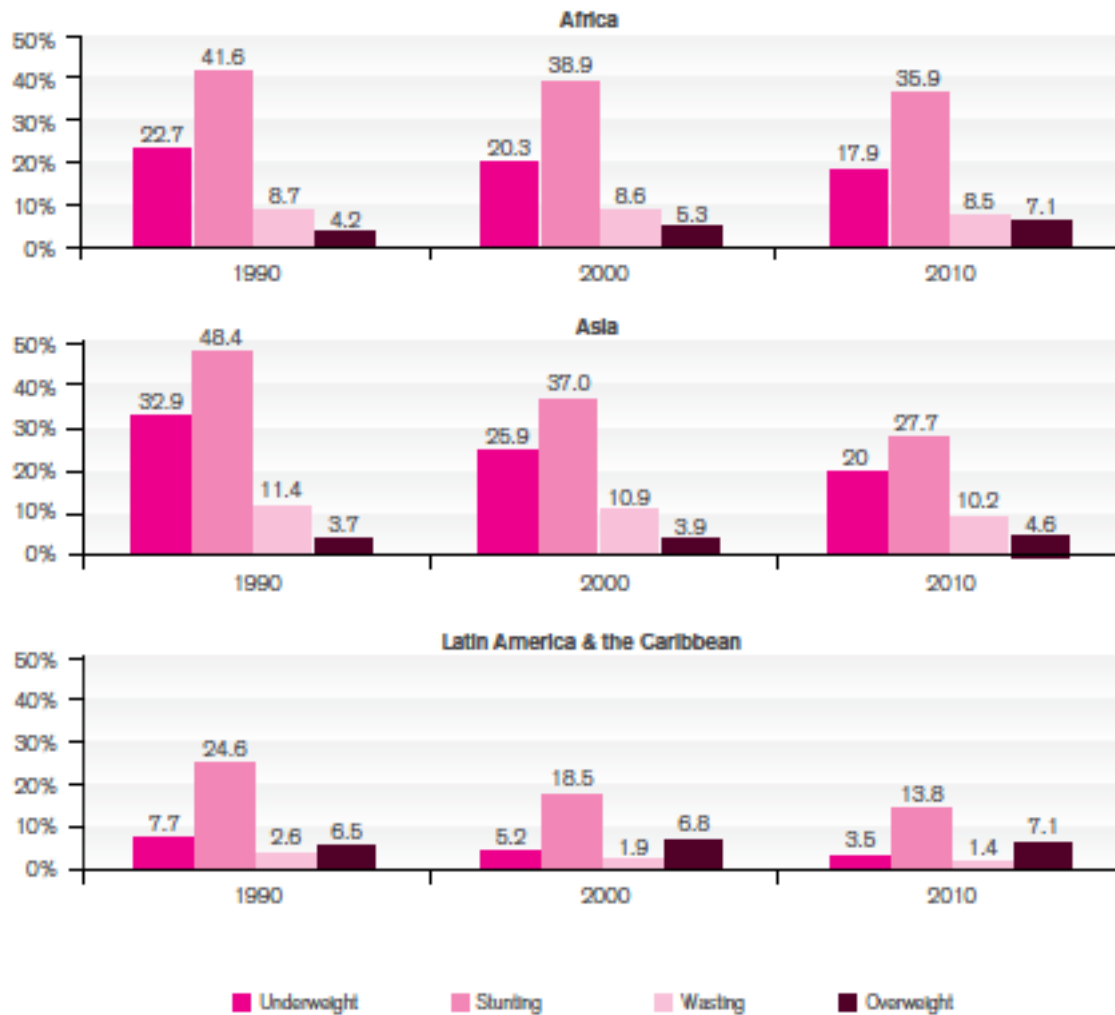
PoU > 20%

PoU 10% - 20%

PoU <10%

Fully food secure

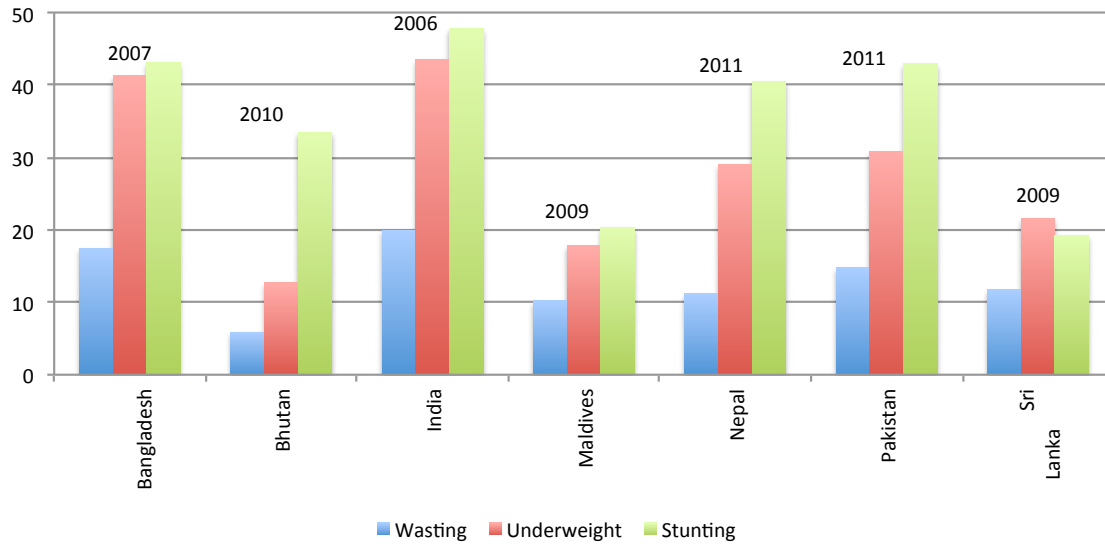
Note: Korea, DPR (-14.2), Tajikistan (-4.2), Uzbekistan (-0.9) decline of food security compared to 1990-92 levels



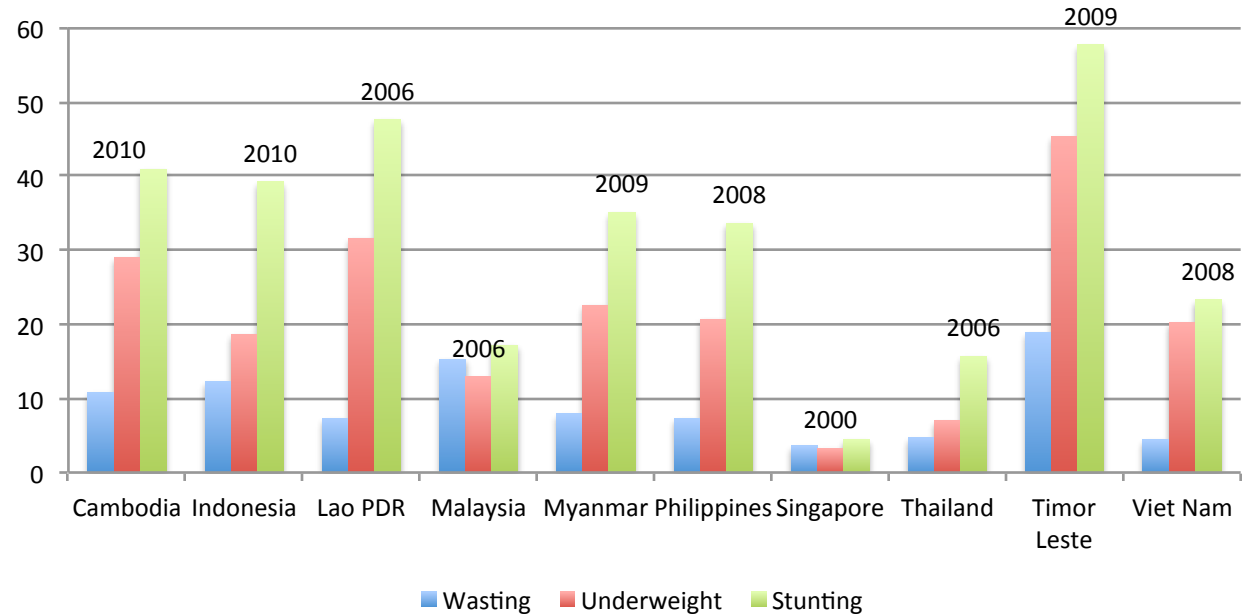
Source: WHO, 2013, Global nutrition policy review: What does it take to scale up nutrition action?

Child malnutrition – Declining in Asia
Overweight – Rising

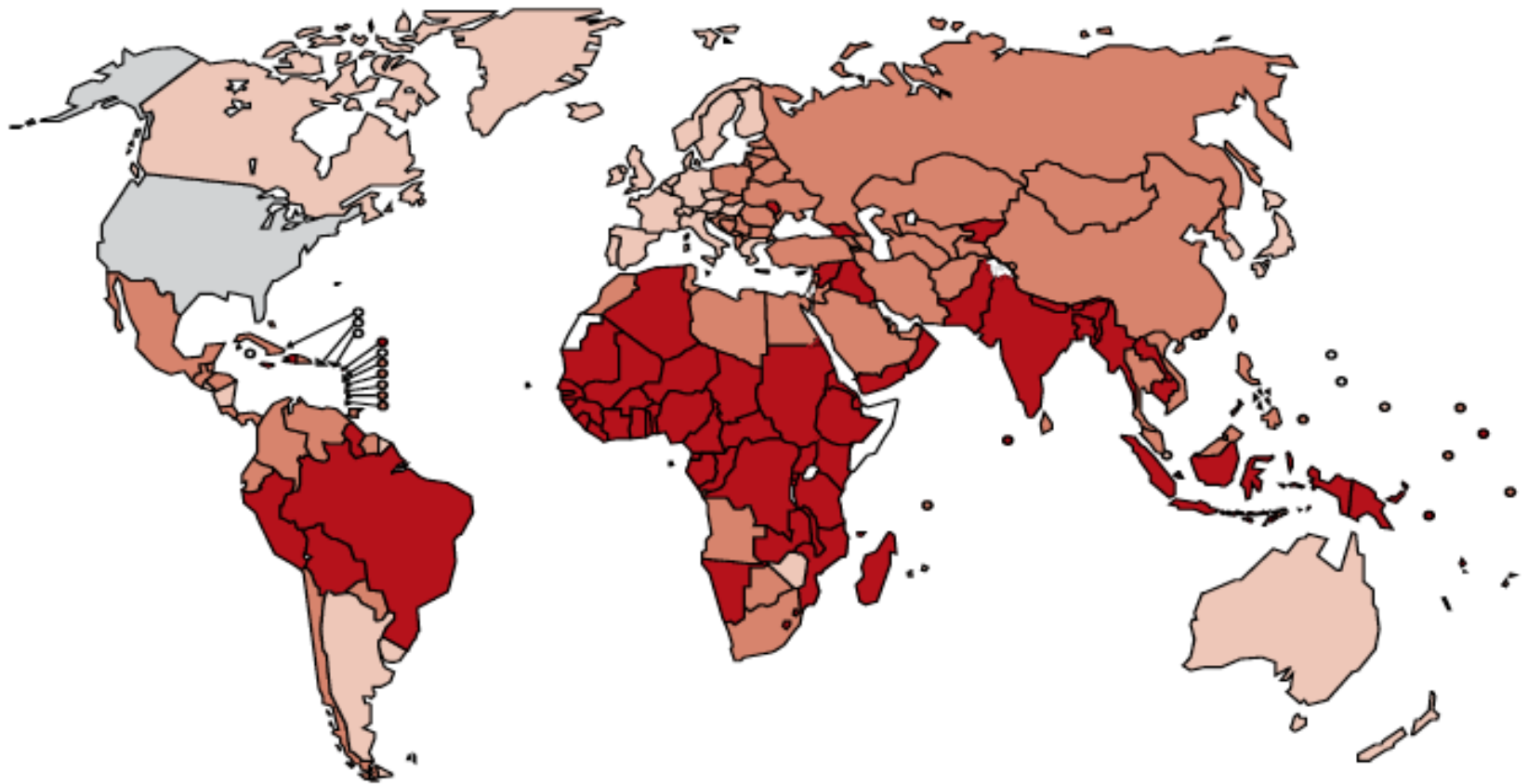
Child malnutrition in South Asia



Child malnutrition in South-East Asia



Prevalence of anaemia



Category of public health significance (anaemia prevalence)

■ Normal (<5.0%)

■ Mild (5.0-19.9%)

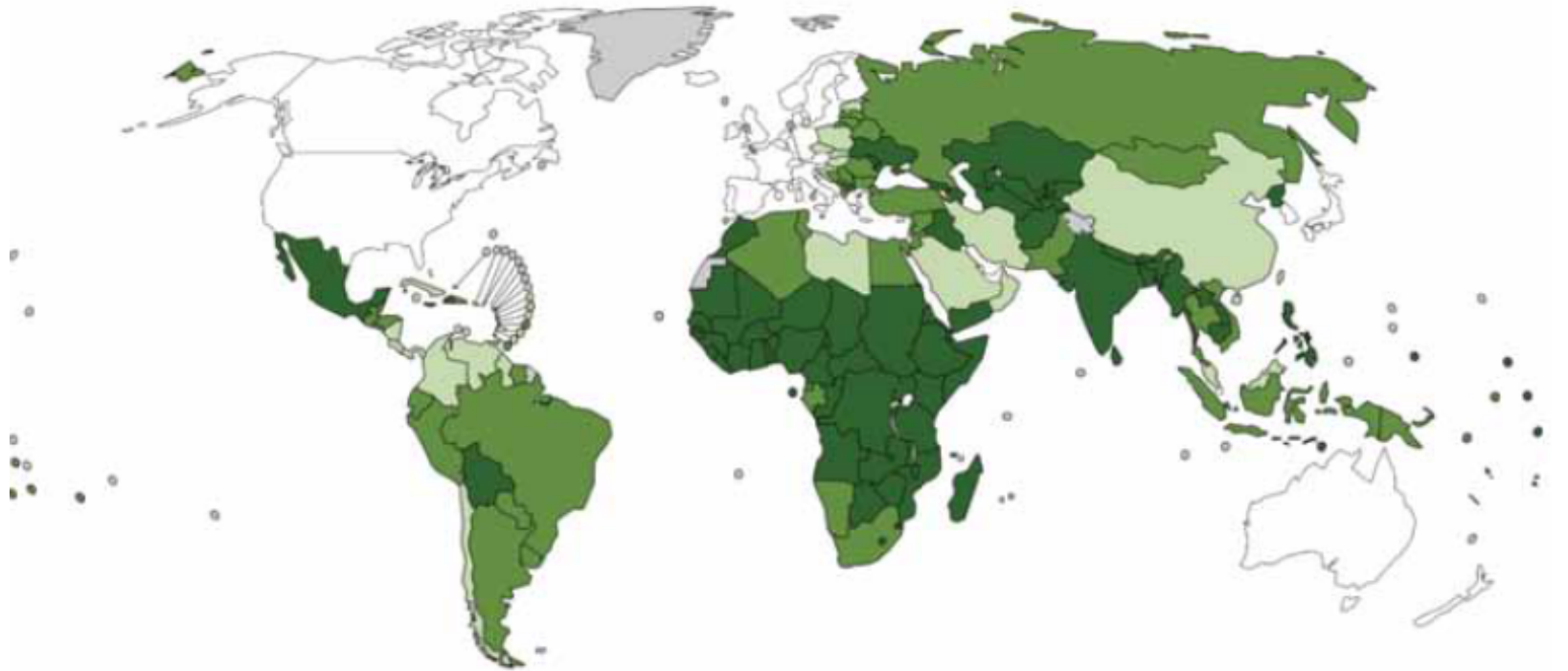
■ Moderate (20.0-39.9%)

■ Severe (≥40.0%)

□ No data

Source: WHO, 2013, Global nutrition policy review: What does it take to scale up nutrition action?

Vitamin A deficiency



Category of public health significance (prevalence of serum retinol $< 0.70 \mu\text{mol/l}$)

■ Mild ($\geq 2\%$ - $< 10\%$)

■ Moderate ($\geq 10\%$ - $< 20\%$)

■ Severe ($\geq 20\%$)

□ GDP per capita \geq US\$ 15000 (countries assumed to be free of vitamin A deficiency of public health significance)

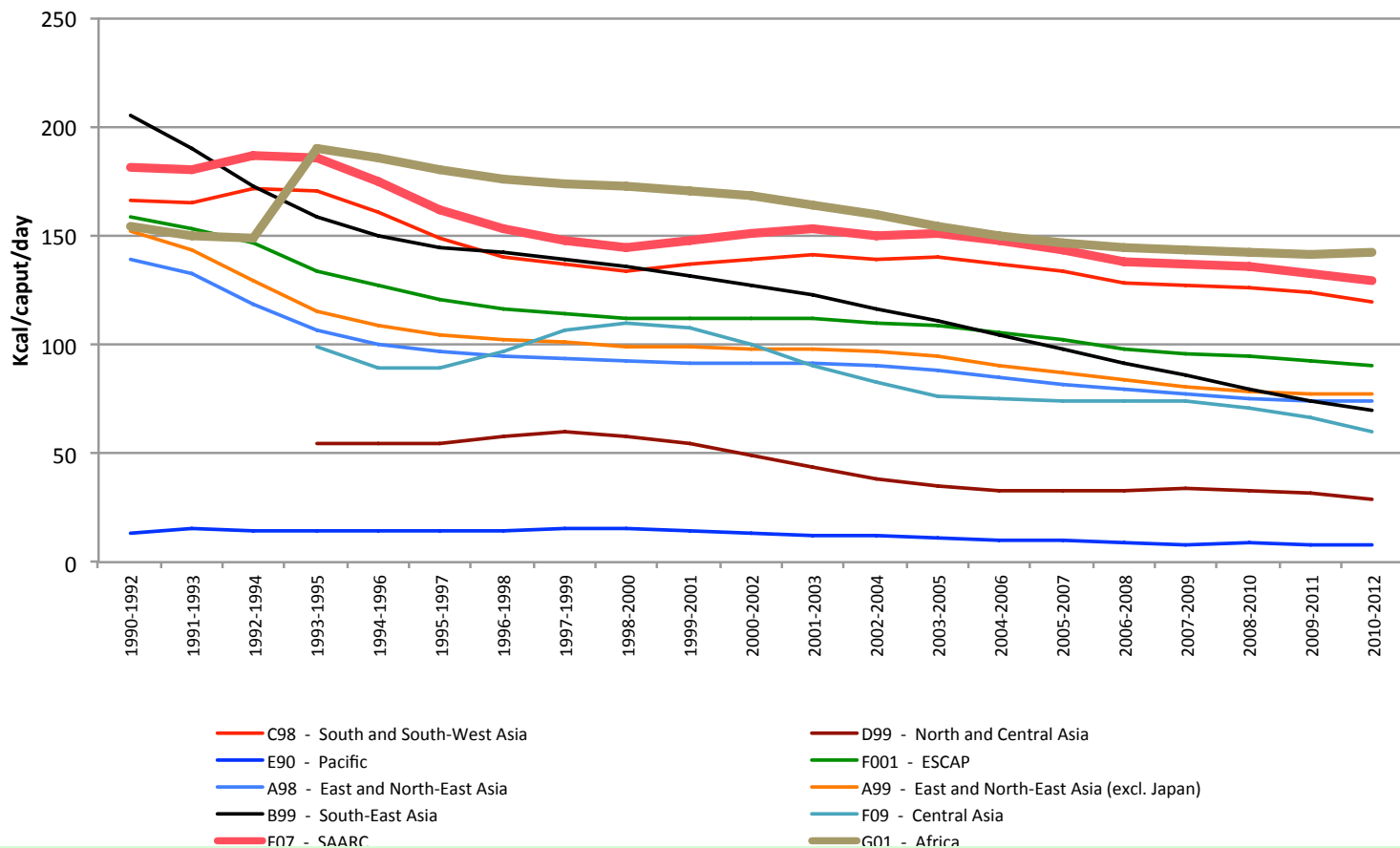
■ No data

Source: WHO, 2013, Global nutrition policy review: What does it take to scale up nutrition action?

Key message

Asia and the Pacific has made remarkable progress in addressing food security during the last two decades, but a considerable proportion of people still faces severe forms of hunger and malnutrition

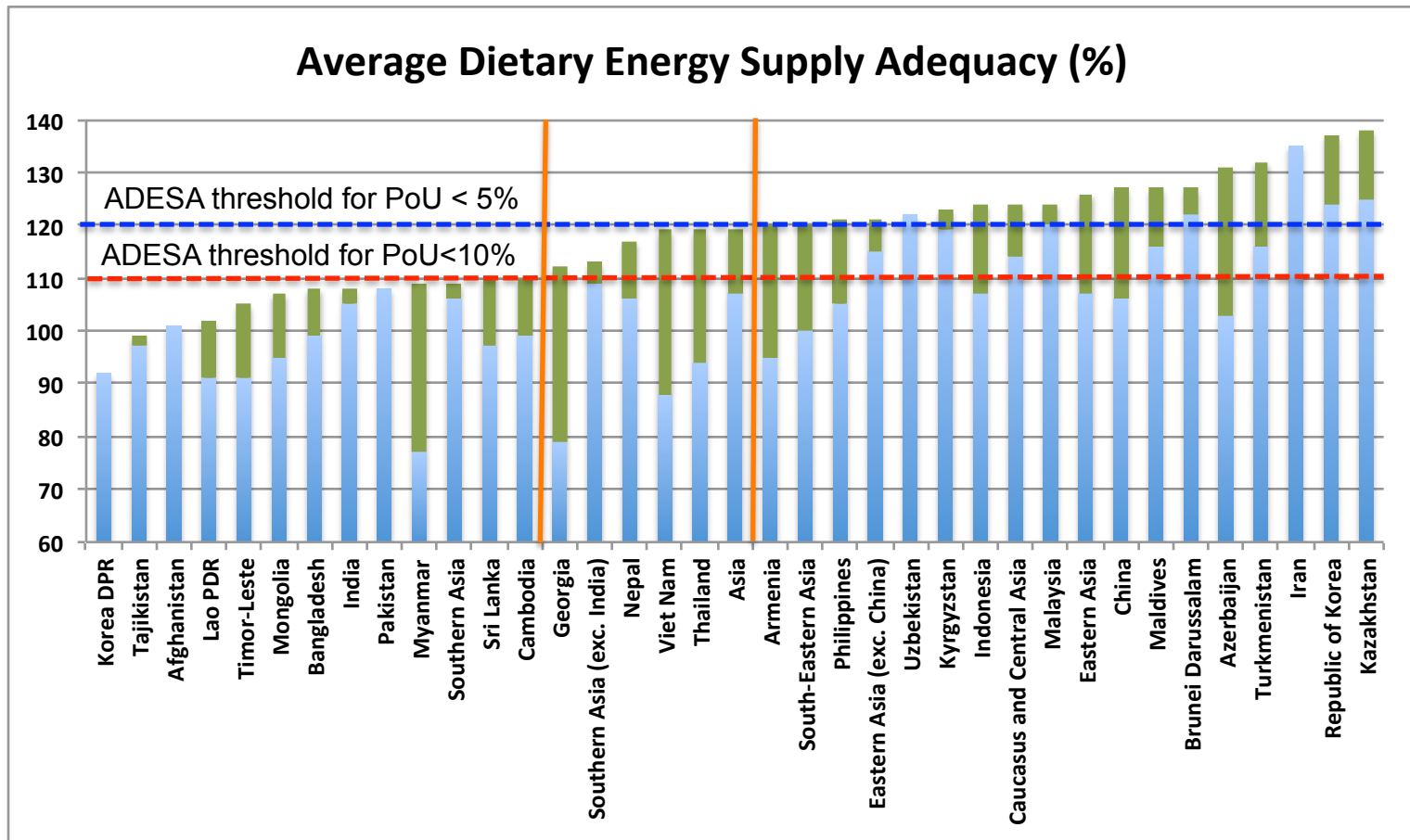
Depth of food deficit



Asia and the Pacific has continuously reduced depth of food deficit, but great disparities remain.

Depth of food deficit: The depth of the food deficit indicates how many calories would be needed to lift the undernourished from their status, everything else being constant. The average intensity of food deprivation of the undernourished, estimated as the difference between the average dietary energy requirement and the average dietary energy consumption of the undernourished population (food-deprived), is multiplied by the number of undernourished to provide an estimate of the total food deficit in the country, which is then normalized by the total population. **Aggregates calculation:** Weighted average using average population as weight (percentage). Missing data are not imputed.

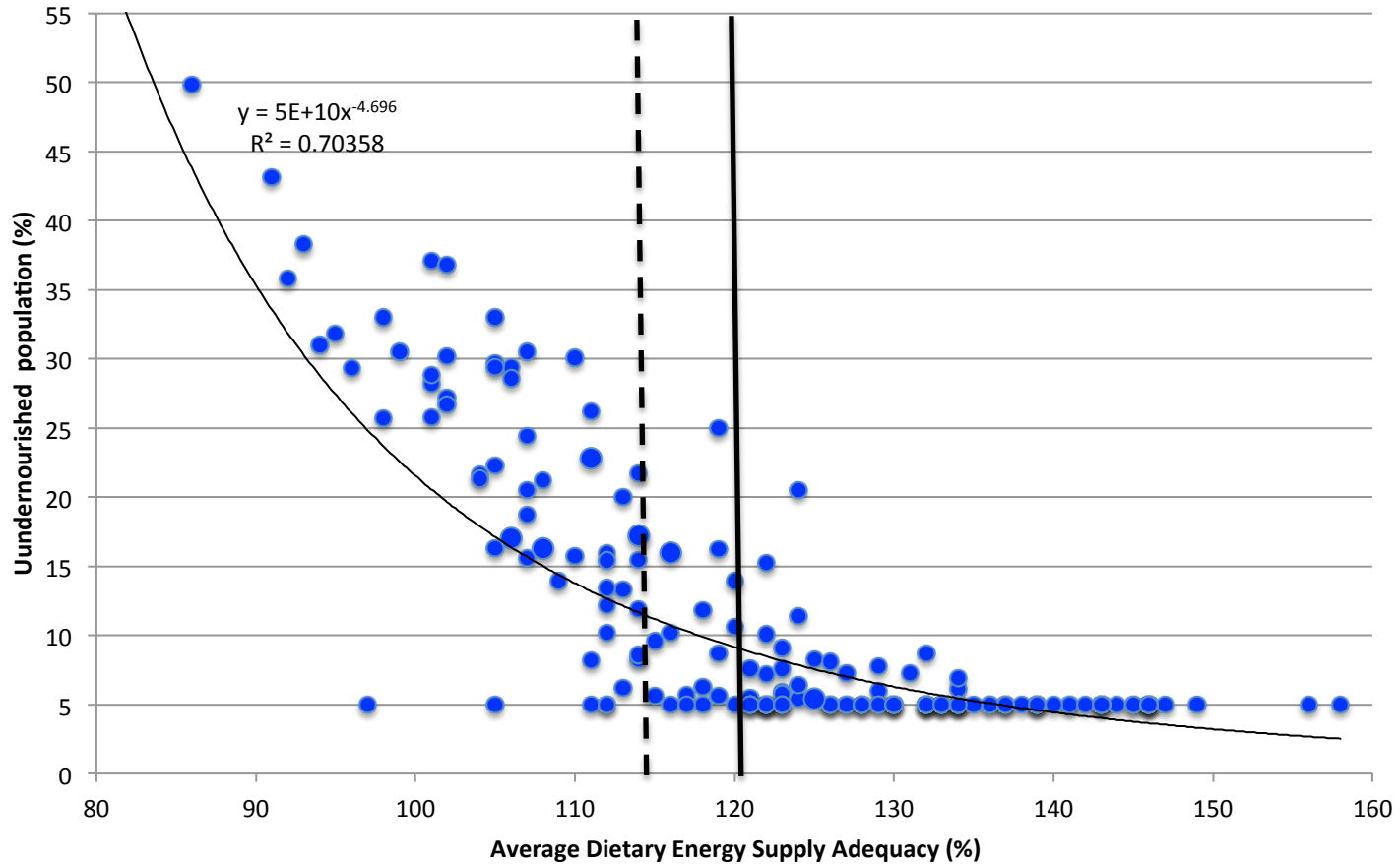
$$\text{Availability} = Q + M - X + \text{Stock} - \text{seed} - \text{animal feed} - \text{manufacturing} - \text{waste}$$



<p>ADESA inadequate Generally high PoU</p>	<p>ADESA partial PoU → may be a result of supply inadequacy</p>	<p>Food security threshold fully met IF PoU > 5% → Unequal food distribution</p>
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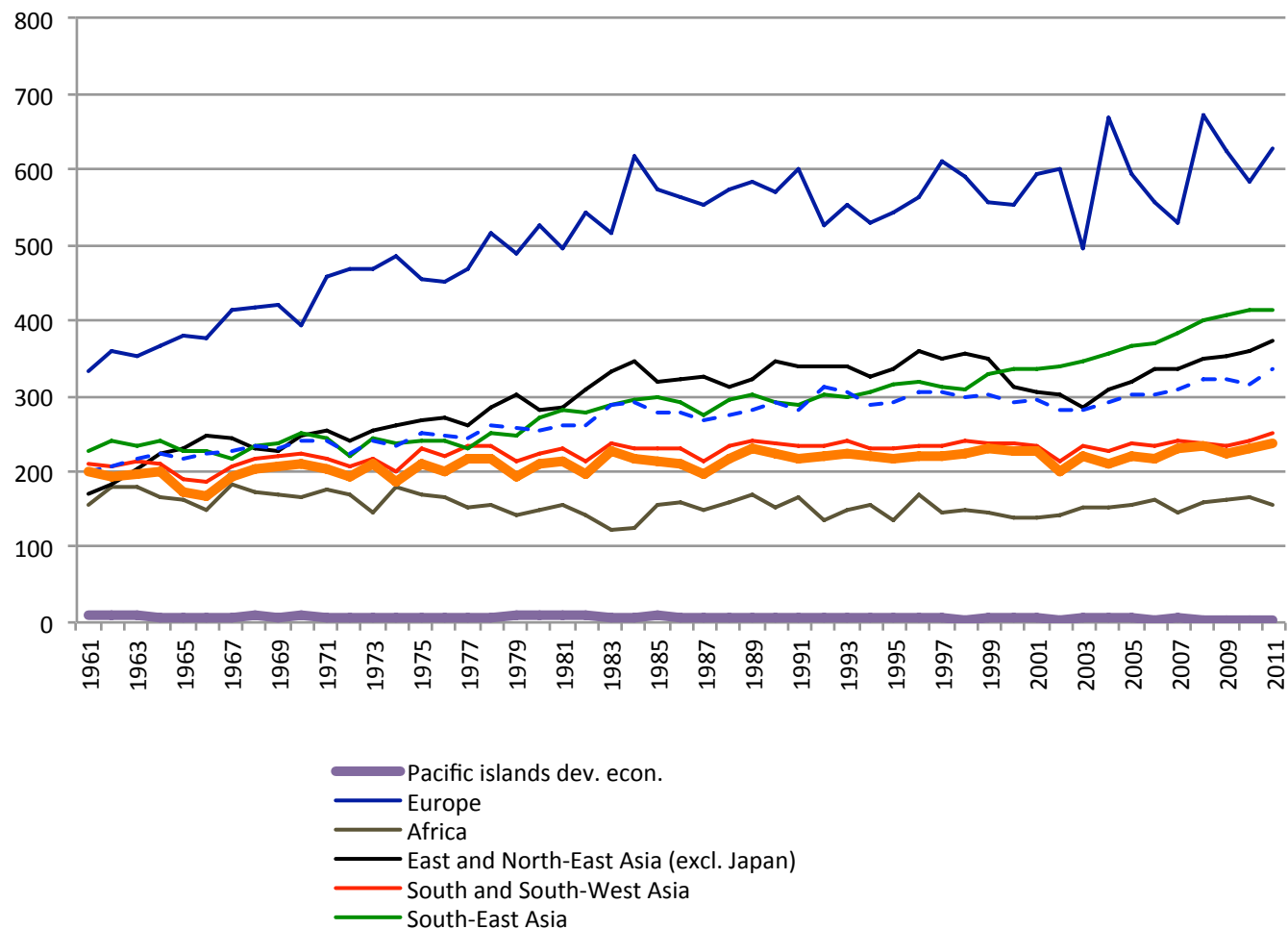
Region as a whole has reached relatively high ADESA but at country level, ADESA may not be sufficient

Average Dietary Energy Supply Adequacy and Prevalence of undernourishment



- $ADESA = \text{Domestic Average Dietary Energy Supply} / \text{Average Dietary Energy Requirements}$.
- Domestic supply = local production + imports – exports + stock changes;
- Utilization = human consumption + animal feed + manufacturing + seed + waste.

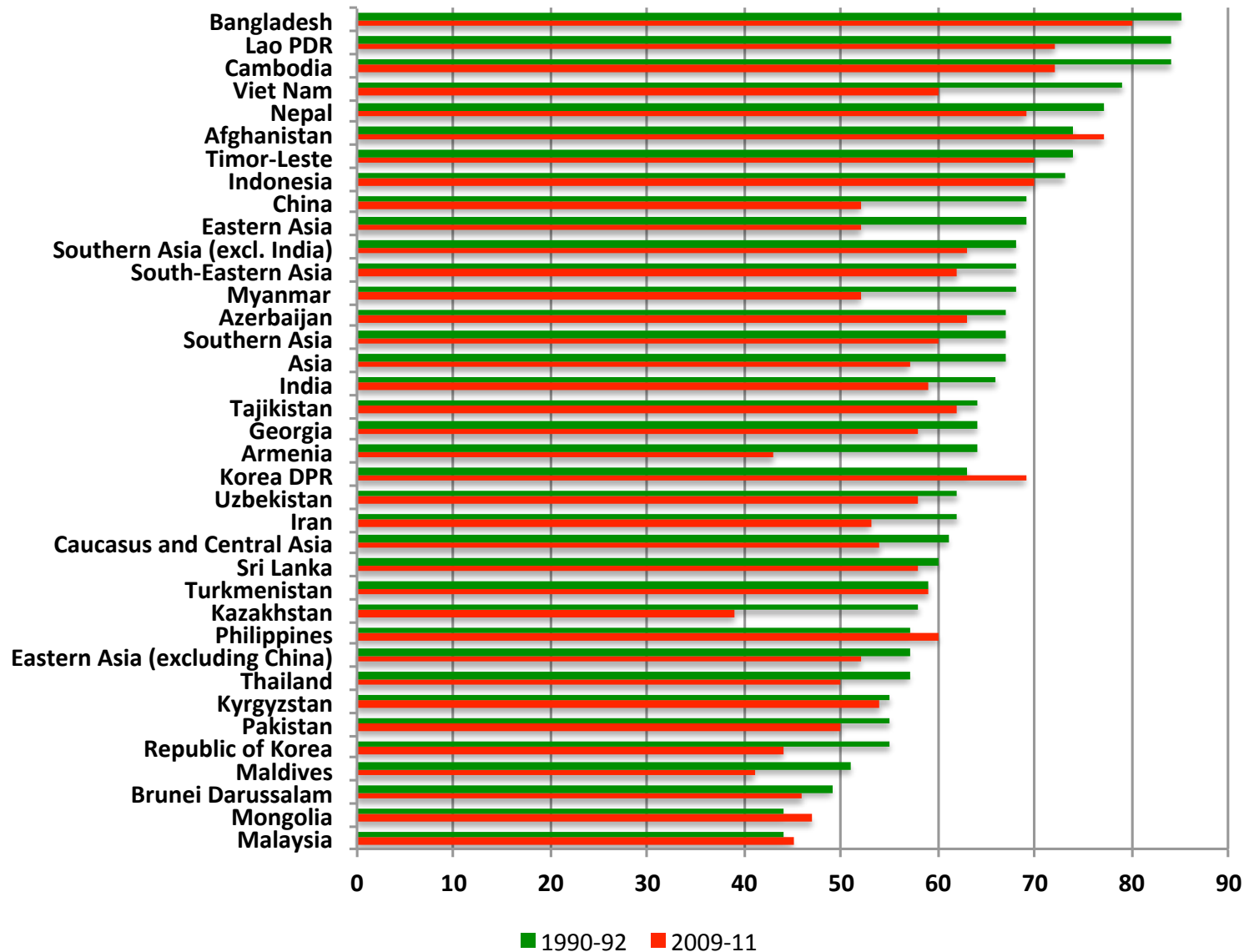
Cereal production per capita (kg) in selected regions



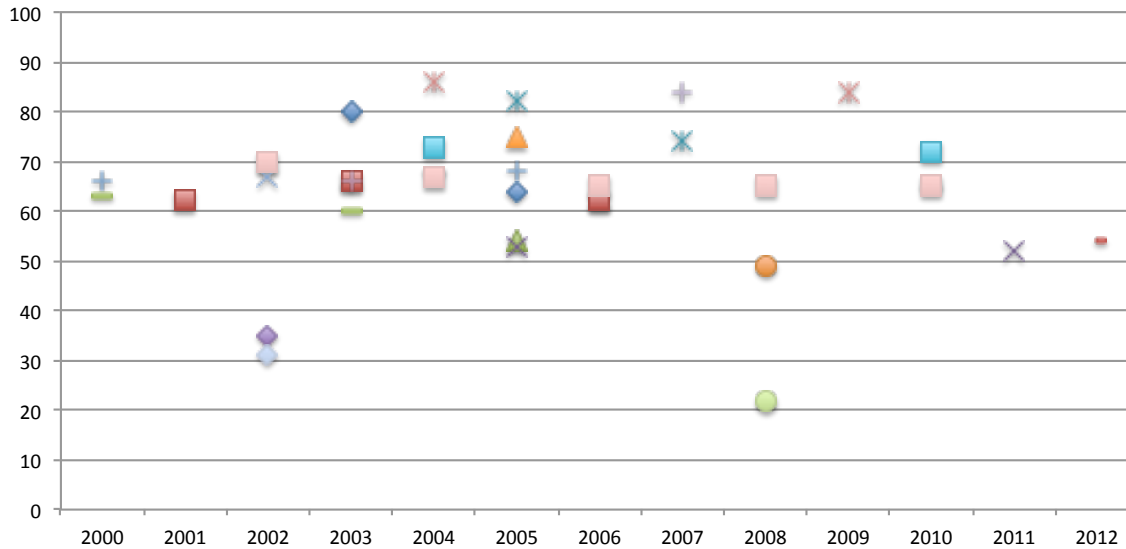
Asia and the Pacific has made good overall progress in increasing cereal production in the region, but disparities among sub-regions and countries persist

Consumption habits are changing

Share of dietary energy derived from cereals 1990-1992 & 2009-11



Access: Household expenditure on food



- ◆ Armenia ■ Azerbaijan — Georgia ✕ Kazakhstan ✕ Tajikistan
- Afghanistan + Bangladesh - Bhutan — India ◆ Maldives
- Nepal ▲ Pakistan ✕ Sri Lanka ✕ Cambodia ● Indonesia
- + Lao PDR — Myanmar — Philippines ◆ Singapore ■ Viet Nam

