United States of America: Balancing the G20’s Global Impact
USA

The dominant but fragile role model

The shale revolution saves the day: The end of the Civil War in 1865 saw a United States population of 36 million. Today it has grown ninefold to 319 million with a median age of 38 and will grow through 400 million in 2050 with a median age of 41 years. A working age population of more than 220 million will be maintained out to 2100. These projections assume high net immigration rates of five million people annually. Recent legal immigrants number about one million annually, so reaching these population levels is uncertain. Unemployment is low at 6% (youth 14%) down from a high of 11% at the end of the global financial crisis. Participation rates are high for both males and females.

Shale geological formations have significantly expanded fuel self-sufficiency options. Gas reserves now cover 55 years of current consumption with shale representing half of reserves and more than half of current production. Oil reserves cover 18 years, half of which is shale oil from five locations. Oil imports are more than half of current consumption. Coal reserves cover more than 250 years of current production. Electricity production is mainly fossil (68%) with nuclear (19%), hydro (7%) and other renewables, mostly wind (6%). The nuclear power renaissance is stalled by low gas prices but five plants totalling 6,000 MW are under construction and 10 plants totalling 27,000 MW are in preliminary planning.

Leading the world in consumption emissions: On a per capita consumption basis, the USA leads the G20 pollution stakes, with over 24 tonnes per person, just ahead of Australia and Canada (see radar diagram and table). In absolute terms, the 7,500 million tonnes consumption emissions are second behind China’s 8,800 million tonnes. One quarter of emissions are imported, mostly for the electricity and heat, transport and chemicals embodied in manufactured products. Leading suppliers of imported emissions are China, Canada, India, Mexico and Japan. The scarce water and land footprints are mid-ranking in the G20 and one third of each is imported. Fish and forest footprints have grown by one quarter since 1990, while the crop and grazing footprints have been relatively stable. India, Pakistan and Mexico are leading suppliers of scarce water, mostly for crops and foods.

The USA's 12 animal threats per million people give a third ranking in the G20 behind Australia and Saudi Arabia. In absolute terms, the 3,500 animal threats rank USA first ahead of the European Union and China. One third of animal threats are imported with leading suppliers being China, Mexico, Canada, India and Costa Rica. The drivers of animal threats are dominated by climate change with wild harvesting (grazing and forestry) and pollution also important.

Two thirds of material usage is imported, reflecting the high level of outsourced extraction activities particularly in ores and construction materials. Domestic material flows have been stable for the last two decades and the 3,000 million tonnes per annum increase over that period have come from imports.

Still the economic powerhouse of the G20: The USA leads the G20 in per capita and absolute terms for economic productivity. This position is maintained for purchasing power, embodied value added and nominal dollar expressions of GDP. The per capita net debt of $17,150 is high, ranking second behind Australia. In absolute terms, the net debt of $5,383 billion is highest in the G20, has quadrupled since 2007 and represents about one third of GDP, while gross debt is twice GDP.

Inequality as measured by the Gini coefficient is near average and ranks tenth for the G20. The estimate used here is after taxes and transfers, but research suggests inequality is growing with many regions having developing world status. One in seven Americans lives below the poverty line and the top tenth of income earners take nearly one half of national income. The USA ranks seventh in the G20 in employment generation, requiring two thirds of one full-time equivalent worker to deliver the goods and services consumed by each citizen. Current estimates of the shadow economy are about one seventh of total, so real employment requirements are higher. One third of the 204 million workforce are external to the country.
A job at any price: Employment creation remains tensioned between the ten million working poor domestically and a 73 million external workforce (see pie diagram on left) who rely on the USA’s consumption habits for their livelihoods. Re-shoring of manufacturing jobs back to the USA is feasible as many firms find that the real cost of domestic manufacture may be as little as one tenth more than Asian manufacturing hubs and have advantages in quality, proximity and protection of intellectual property. However the USA’s NAFTA trading partner, Mexico, may capture re-shored jobs due to lower cost and an educated workforce.

Political intransigence fosters the Clean Power Plan: State legislatures in the USA already have in place 47 programs for demand-side efficiencies, 38 for renewable energy portfolios and 10 market-based emissions trading schemes. The recent Clean Power Plan from the Environmental Protection Agency aims to mandate federally a reduction by one third of electricity sector emissions, primarily by halving the emissions intensity per megawatt hour of coal generation. This will phase out the aged fleet of coal generators and accelerate the uptake of gas turbines and renewables. This partly implements the five mitigation phases of 2013 President’s Climate Action Plan: clean energy, better transport, increased efficiency, methane reduction and government targets for use of clean energy.

Climate change has already arrived: The 2014 release of the National Climate Assessment reports a tripling of intense heat waves and a doubling of heavy rainfall and flooding events over the last two decades. Climate change projections suggest the northern states will have rainfall advantages in autumn, winter and spring while the southern states and Mexico are mostly disadvantaged. All states suffer in summer. Climate adaptation requires fundamental changes in planning statutes. Pollution, poverty and habitat fragmentation will heighten climate impacts.

Biodiversity continues to decline: In spite of scientific leadership in conservation biology, an Endangered Species Act and notable success stories for some species and habitats, retention of species continues to decline domestically with the press of population and economic development. A 2011 assessment highlighted declines in range, populations and abundance across the classes of vertebrates (90%), invertebrates (60%) and plants (60%). Protecting critical habitats under climate change is central to recovery plans of more than 1,500 currently imperilled species.

- Other G20 countries should note the fragilities inherent in the USA’s dominant development model of high economic productivity, high debt, population growth, growing inequity and high consumption impacts. The globalisation of America’s labour force and physical impacts has accelerated since the 1990s. Curtailing the reach and influence of its global value chains is possible but unlikely, as the USA strives to retain power and influence in the Asian Century.
Rationale for Indicators

**Greenhouse Emissions (CO2-e):** The emissions footprint for each person's consumption leading to heat gain in the atmosphere and oceans and thus increasing climate disruption (due to accounting uncertainties, the indicator excludes land use, land use change and biomass burning). **Measure:** Tones of CO2 equivalents per capita excluding land use change, forestry and biomass burning. Year 2011, Source- Eora Global Database http://worldmrio.com/

**Material Footprint (Material usage):** The material use footprint. Increasing material use by developed and developing economies poses long term threats to sustainability at both ends. Limits to resource quality of virgin materials and a faster consumption lifecycle suggest issues for disposal and recycling. **Measure:** Total material flow in tonnes per capita. Year 2008. Source- Eora Global Database http://worldmrio.com/

**Scarcity Water Use:** The scarce water use footprint. Over-extraction increases threats to human water security and river biodiversity in 30 of the globe’s 47 most volumetric river basins. This scarce water is eventually consumed as clothes, food and beverages. **Measure:** Tons of scarcity-weighted water use per capita. Year 2011, Source- Eora Global Database http://worldmrio.com/

**Endangered Animal Species (Species threats):** Land clearing and over-fishing are two of 15 or more drivers of accelerated rates of biodiversity threats to sustainability. Species from the IUCNs 'Red List' to complex trade networks of threatening species (domestically and out-of-country) per full time equivalent workers. **Measure:** Global Database of endangered animal species (species production activities. Year 2011 Source- Eora Global Database http://worldmrio.com/

**Gross Domestic Product (GDP):** A conventional and widely accepted economic measure of development and progress in each country. This is not a footprint or production chain measure. **Measure:** GDP per capita in deflated 2005 US dollars from United Nations data repository Year 2012 Source- GDP by Type of Expenditure at constant (2005) prices: http://data.un.org


**Gini coefficient:** The extent to which income is distributed. **Measure:** The Gini coefficient or inequality footprint. **Year 2011 Data** not yet available as part of Eora employment studies. Data not yet available as part of Eora employment studies. Year 2011

**Employment Footprint (Jobs):** The number of jobs required to maintain domestic consumption and lifestyle. A cascade of lower paid workers delivers goods and services through complex production chains to more affluent consumers. **Measure:** Full time equivalent workers (domestically and out-of-country) per capita of domestic population, Year 2011 Source- Eora Global Database http://worldmrio.com/

**Net Debt (Debt):** The extent to which a domestic economy is indebted to overseas financial loans for productive investment and lifestyle consumption. **Measure:** Nominal (not deflated) US dollars per capita of NP or NIIP (Net International Investment Position) from IMF data repository. Year 2012 http://elibrary-data.imf.org/public/FrameReport.aspx?symbol=20840396

**Greenhouse Emissions:** The extent to which a country's emissions footprint of nations: A novel approach for the benefit of part of the population and a failing social net for poorer citizens.


**Inequality and gini coefficient:** Alsamawi et al. (2014). The inequality footprint of nations: A novel approach to the quantitative accounting of income inequality. PLOS ONE http://www.plosone.org/