Indonesia: Balancing the G20’s Global Impact

Barney Foran¹,²
Manfred Lenzen²
Daniel Moran²,³
Ali Alsamawi²
Arne Geschke²
Keiichiro Kanemoto⁴

1. Institute of Land Water and Society, Charles Sturt University, Albury, Australia
2. ISA, School of Physics, University of Sydney, Australia
3. Norwegian University of Science and Technology, Trondheim, Norway
4. Institute of Decision Science for a Sustainable Society, Kyushu University, Fukuoka, Japan
Modern development came with the oil boom: Modern Indonesia grew from 16 million people in 1800 to 252 million currently as life expectancy developed from 30 years then to 70 years now. The population will peak at around 310 million after 2050 as the median age grows from 29 to 38 years. A working age population of 180 million will be maintained out to 2100. Development was spurred by the oil boom of the 1970s when petrodollars were invested directly into food security and regional development, avoiding the extremes of the ‘resource curse’. Official statistics cite unemployment rates of 6%, greater than 20% for youth and a high work inactivity rate. One in eight people live below the poverty line.

Regional disparities in resource endowment and biological productivity make for extreme development challenges. One of the largest energy exporters (mostly coal and gas) Indonesia faces an energy trilemma of energy poverty ($20 billion in subsidies), energy security (oil reserves declining fast) and the need to reduce fossil emissions. Most electricity generation is fossil (87%) with hydro (7%) and geothermal (6%) providing the rest. The world’s largest geothermal generator of 330 MW is under construction at Sarulla after long delays in financing. Only 4% of a large renewable resource is tapped, with energy institutions and financing the main barriers. Self-sufficiency in stable grains is declining as farming land is lost to urbanisation, commercial development, palm oil and paper pulp plantations.

Development drives environmental impacts: Two decades of development have seen material flows double, emissions increase by one half while scarce water and land footprints have remained relatively stable. On a per capita basis, Indonesia remains second lowest in the G20 (mostly ahead of India) for environmental impacts while scaling with population size elevates it to a mid-ranking in whole economy terms. Consumption emissions of 3.6 tonnes per capita would rise by a further one tonne if forest and peat land fires that cause the ‘Asian haze’ were included in the accounting measure. Since most of the future produce from burnt forest will be exported palm oil and paper pulp, logically, these emissions would be allocated to mostly developed, importing countries.

Media reports point to foreign corporate entities that stimulate demand for plantation industries, although the hand that lights the fire remains Indonesian.

One third of the scarce water footprint is imported mostly for grains, with Australia, India and USA the leading supply countries. Threats to animal species are dominated by wild harvesting (mostly forestry) with agriculture, urban expansion and pollution each imposing one half the threat level of forest clearing. Exported animal threats (not included in domestic consumption) go to Japan, USA, Singapore, China and Korea where secondary industry value adds to Indonesia’s raw material inputs. Production chains which embody forest clearance now have conservation management and production chain certification that may constrain clearance rates. However, regional poverty remains the real driver of destruction.

Inequality remains endemic: The Asian financial crisis of the late 1990s led to a peak in Indonesian inequality in the year 2000, a reversal by the year 2004, but a slow increase to today with a G20 sixth ranking bracketed by Russia and Turkey. Structural problems in the economy, particularly poor communications and transport infrastructure, lead to fears that development might be trapped at middle income levels, even if development proceeds well. Jobs generation is low with about one quarter of one full time worker supporting each citizen. Only one twentieth of jobs serving Indonesia are external (China, India, Thailand dominate), but one third of Indonesian jobs serve other countries (Japan, Singapore, China, USA dominate).

The per capita GDP is second lowest in the G20 and the absolute value fourth lowest. Although a ‘purchasing power’ expression of GDP triples the numeric value, the full range of productivity measures still sees Indonesia ranking in the bottom one quarter of the G20. While international debt is mid ranking in per capita and absolute terms, debt and GDP per capita are approximately equal as food and oil security decrease, thus requiring more external financing for imports.
Jobs generation remains difficult: As investment becomes more capital intensive, the jobs per investment unit decline and with them equity improvements. The archipelago’s extremes of resource deficient rural people and crowded urban centres, combined with energy poverty and large infrastructure deficits, do not posit simple development options. Small holder farmers require micro-finance and market access sufficient to counter declining food security. Expectations that a burgeoning service economy will drive development seem over-stated.

Some export markets (Germany, Singapore, UK) take a wide variety of employment rich products (vegetable oils, rubber, textiles, electronics) while others (Japan, Korea) are dominated by energy and ores, both lower employment generators. Given the severity of equity and employment tensions, current policies which stipulate domestic value adding, to the detriment of raw commodity exports, are understandable, even if they run counter to conventional wisdom.

Less challenged by global climate change: While climate change scenarios promise temperature increases, most of Indonesia will see rainfall gains sufficient to increase plant productivity, thus avoiding rampant food insecurity. Cropping systems will need to adapt and policies to assert staple food cropping systems over better adapted plantation crops of palm oil, coconuts and rubber. Biodiversity will be most threatened in lowland forest systems (oil palm now covers 14 million hectares) and mangroves. Holding two of the world’s 25 biodiversity hotspots, Indonesia is also a centre of agro-biodiversity where more than 40 million Indonesians rely on biodiversity for basic livelihoods. Conservation parks with varying levels of protection cover 15% of the land area with 22 million hectares of marine parks. One third of conserved species are threatened and captive breeding of more than 800 animals and plants is the conservation backstop.

New ‘blue economy’ initiatives will integrate livelihoods and conservation with upstream and downstream designs for tuna fishing aquaculture, marine tourism, salt and pearl industries. While emissions reduction strategies are needed and renewable resources plentiful, energy poverty remains dire and fossil options will dominate.

- Indonesia’s progression will remain uncertain until energy poverty with its resultant civil unrest and drain on government funds is alleviated. As one origin of the ‘Asian haze’ and a custodian of tropical forests and their unique animals, innovations in land management and livelihoods are mandatory. Rich consumers of this tropical largesse must pay more than just a fair price.
Rationale for Indicators

Greenhouse Emissions (CO2-e): The emissions footprint for each person’s consumption leading to heat gain in the atmosphere and oceans due to climate disruption (due to accounting uncertainties, the indicator excludes land use, land change and biomass burning). Measure: Tonnes 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/

Endangered Animal Species (Species threats): Land clearing and over-fishing are two of 15 or more drivers of accelerated rates of biodiversity endangerment. This species threat footprint traces endangered animal species from the IUCNs ‘Red List’ to complex trade networks of threatening production activities. Measure: number of endangered animal species (species threats) per one million of human population. Year 2000. Source- Eora Global Database http://worldmrio.com/

Land Footprint (Land): The land footprint in trade corrected terms or consumption terms required for built infrastructure, crops, forest, fishing and grazing. Same accounting principle as the ‘ecological footprint’ but excludes energy/carbon land as the emissions indicator specifically accounts for that impact. Expressed in ‘globally-average hectares’ adjusted for productivity potential. Measure: Land area in globally-average hectares required to underpin consumption footprint. 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 depository Year 2012 Source- GDP by Type of Expenditure at constant (2005) prices: http://data.un.org/

Inequality (Gini coefficient): The footprint or production chain measure of the distribution or spread of wages within a country, across the population. A smaller rich elite and a large working poor gives a higher Gini coefficient while a more equal country has a lower value (e.g. South Africa 0.59, USA 0.38, Japan 0.29). Measure: Time series of Gini footprints computed as part of Eora population studies. Data not yet available as part of Eora Database. Year 2011

Employment Footprint (Jobs): A social indicator measuring the domestic and outside workforce 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/


Interpreting a Radar Diagram

A radar (or spider-web) diagram is used to display data from a wide range of sources and allow complex interactions to be simply displayed.

This G20 study explores the tension between of economic production, social returns and environmental impact through reporting on global value chains and personal consumption (i.e. what a country’s citizens actually consume rather than its territorial production). There are five environmental indicators (emissions, water, endangered species, land footprint and material flow). These are balanced by two economic indicators (gross domestic product and net international debt) and two social indicators (employment footprint and the Gini coefficient or inequality footprint). All data are on a per-capita basis apart from the Gini coefficient which reports on income distribution nationally.

Two phases of data normalisation are used in this G20 study. Firstly, a ‘simple mean’ or average for all G20 countries is computed for each of the nine indicators. Secondly, each country’s value is divided by that mean to give a ratio number. In the radar diagram the G20 average (equals 1.0 by definition) is shown by the red dashed line equidistant from the centre of the web. The blue solid line shows how much each country’s indicator is bigger or smaller than the G20 average. The overall pattern or signature of each country is important. There is no inherent right or wrong in being inside or outside the G20 average as each country has its own set of special circumstances.

Thus for the Indonesian example above, many of the indicator set are well below the G20 average. These below-average indicators report both better and worse outcomes. Low indicators for scarce water use, land footprint and material flow point to lower impacts on ecosystems in per capita terms but little room for complacency given total population size. A higher than average Gini coefficient reflects high inequality and slow policy success to date. A 90% below average GDP suggests economic development is lacking while a low jobs figure shows unmet employment needs.

INDONESIA Benchmarking Indonesia’s per capita consumption

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