Global Footprint Network
Advancing the Science of Sustainability

UNDP

Resource Constraints and Economic Performance

in Eastern Europe and Central Asia

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Note about this report: One of the most significant new data trends presented in this report is the calculation of the market costs of biocapacity deficits over the last few decades (as introduced in Section 2). The results presented in this report are still crude and simplified. The Global Footprint Network is engaged in research to refine this analysis.

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Global Footprint Network

Global Footprint Network, based in Oakland (California), Brussels and Geneva, is an international think tank working to make ecological limits central to decision-making by advancing the use of the Ecological Footprint, a resource accounting tool that measures how much nature we have, how much we use and who uses what. By developing transparent, scientifically robust measures to help leaders monitor and protect ecological assets, the Global Footprint Network provides decision makers with the tools they need to succeed in an ecologically-constrained world.

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** Hereafter referred to in the context of the UN Security Council Resolution 1244.*

Executive Summary

This report explores the link between resource constraints and economic performance for countries in Eastern Europe and Central Asia.

Evidence suggests that humanity is entering a new era where development globally will be more constrained by resource availability than ever before. Since the Second World War, resource limits have seldom been considered to be a significant economic factor (with the exception of the oil crises of the 1970s). They could therefore be left out of economic equations. This is no longer the case. Ever more countries have become biocapacity debtors. Their residents use more, in net terms, than what ecosystems within their countries can regenerate. Because of this global trend, biocapacity could become the limiting factor for economic performance in the twenty-first century.

This report documents the biocapacity situation of every country in the region, linking it to economic performance and other indicators of financial health. It suggests that resource issues are growing more prominent and are having more impact economically for many countries in the Central Asia and Eastern Europe region. If global and regional trends continue, resource constraints will shortly become the dominant determinant of economic success in this region.

These resource trends are slow-shifting, and hard to reverse. But reversal is possible. First of all, reversal requires adequate management and resource accounting tools like the Ecological Footprint. Once drivers are understood, policies can be devised and monitored that address these trends in cost-effective ways. Without any reversing trends, the impact of this growing pressure on natural capital might rise substantially, and might even become increasingly non-linear.

Recognizing these constraints also offers a number of opportunities. First, it helps to reveal that proactively addressing the constraints is in the direct self-interest of nations, since benefits generated by adjusting to this new reality will accrue to the nations that act. Those who fail to act will be outcompeted. While resource constraints are global, the risks and opportunities created by these constraints are largely local. Hence, early action pays off.

The report concludes by briefly outlining the opportunity for action. It emphasizes the importance of focusing on wealth generation (natural and human wealth), rather than on throughput (e.g., gross domestic product (GDP)). If prosperity (that is,, per capita wealth) is taken as the goal post, countries substantially increase their chances of succeeding in the coming rapids of resource constraints if they take action.

Section 1 : Entering a New Era

Summary of Section 1: Why Biocapacity Matters

This section makes the case that humanity is entering into a new era of biocapacity constraints, with constricting supplies of natural resources. While many of the trends are global, each country is in a unique situation, as demonstrated by the biocapacity and Footprint trends of countries in Eastern Europe and Central Asia.

Considering the economic relevance of these trends, addressing one's resource exposure risks is in the competitive interest of each country. It allows each country to position itself favourably in the new era of resource constraints.

Over the last half century, people's well-being has, on average, made stunning advancements. While no one disputes that challenges still exist – including the continuance of extreme poverty, vulnerability to food and energy price volatility and economic inequities in many parts of the world – reports by the United Nations Development Programme (UNDP) and others show that, in the last few decades, human development has increased in nearly every country (UNDP, 2010).

As more people have achieved greater gains in health, education and purchasing power, they have increased demand on the world's natural resources – more water, food, energy and associated carbon dioxide (CO2) emissions. In parallel, the human population has increased from 3 billion in 1960 to 7 billion today. Even though consumption is very unevenly distributed, this expansion of the human population has further increased the impact on global water, food, and energy supplies, and has accelerated the amount of CO2 pollution into the world's atmosphere and oceans.

While resource constraints have not been a significant global limitation on development in the first decades after the Second World War, the situation is changing. Overall demand is now outstripping the Earth's regenerative capacity (Global Footprint Network, 2010). The excess demand is now supplied by liquidation, rather than sustainable use, of natural capital. Freshwater, fossil fuels, cropland or biodiversity – the raw materials people want most to improve their well-being are increasingly in short supply. Similarly, the by-products of this hunger for goods – waste, erosion, carbon pollution, desertification – grow larger every year, as chronicled by the United Nations and other global reports (for example, the Millenium Ecosystem Assessment (MEA), the International Energy Agency (IEA), the Food and Agriculture Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC)).

This supply crunch is already a contributing factor to strife across the globe. It may have fuelled the tension behind the Arab Spring, where rapidly growing human demand, including significant

population growth, was met by local resource constraints and increases in global food and energy prizes, shaving off opportunities and employment, particularly for the younger generation. The crunch certainly is painfully felt in regions from the Horn of Africa all the way to Haiti. Human misery and societal breakdowns are driven by much more than a lack of resources, of course. Yet, even low corruption, balanced budgets, and the absence of ethnic conflict, for example, cannot easily replenish resources that are either vanishing or already gone.

In fact, countries' fiscal debt dynamics, where national debt is rising precipitously compared to the size of a country's GDP, might simply be a sign of trying to overcome the supply crunch. But widening globalization and interdependence mean that everyone is more exposed to shortages and price volatility at the same time, and there are no new, untapped markets or continents to save us from this modern resource curse – a curse defined not by exploitation of abundance, but by scarcity hidden within the presumption of plenty.

Fortunately, as we are entering this new era, new tools are also becoming available to nations that will help them understand the resource limits they face, and make smarter choices in an increasingly connected and competitive world. Humanity has breached global limits, as succinctly summarized by researchers from the International Geosphere-Biosphere Programme (IGBP), the Resilience Institute and the Stockholm Environment Institute (Rockström et al., 2009).

Global examples of dwindling resources and increasing pollution:

- Greenhouse gas (GHG) emissions are accumulating in the atmosphere, causing climatic changes and potential negative feedback on the health of ecosystems (Haberl, 2006; Holdren, 2008; UNEP, 2007; Butchart et al., 2010). Worldwide atmospheric concentrations of carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), for example, have noticeably increased in recent decades, and they now considerably exceed the natural range over the last 650,000 years. With high confidence, scientists have concluded that these global average concentrations are due to human activities (IPCC, 2007).

- Many forests, particularly in tropical zones, are cut down faster than they can re-grow: 130,000 km2 of forest have been destroyed each year for the last 15 years.

- 15% of ocean fish stocks were depleted over the same period and fish are caught faster than they can restock (UNEP, 2007). More than 50% of fish stocks are overexploited commercially (FAO SOFIA 2008).

- Global extraction of natural resources (e.g., biomass, fossil fuels, metal ores and other minerals) has increased by approximately 50% in the last 25 years (Behrens et al., 2007; Giljum et al., 2009a; Krausmann et al., 2009) in part due to the world's population quadrupling over the last 100 years.

- Availability of freshwater in countries in arid and semi-arid regions of the world, especially Central and Western Asia and North Africa, has decreased to or gone below below 1,000 m3/capita/year, which is the threshold for water scarcity (Falkenmark et al., 1989).

- Three of seven planetary boundaries have been exceeded. They are: climate change (CO2 concentration in the atmosphere <350 ppm and/or a maximum change of +1 W/m2 in radiative forcing); biogeochemical nitrogen (N) cycle (limit industrial and agricultural fixation of N2 to 35 Tg N/yr) and the rate at which biological diversity is lost (annual rate of <10 extinctions per million species) (Rockström et al., 2009).

Consistent with this recognition, Ecological Footprint[1] accounts provide an approach to track human demand on the biosphere. By offering an accounting approach that can be applied at any scale – product, person, city, country or humanity – it helps to make such boundaries relevant to decisions at the individual, organizational, regional or national level. These accounts track human demand on the biosphere: they summarize the biological assets a country has, as well as the demand its residents put on their own assets and those in the rest of the world. With these accounts, governments can better measure their exposure to the risks of using more biological capacity than ecosystems can give.

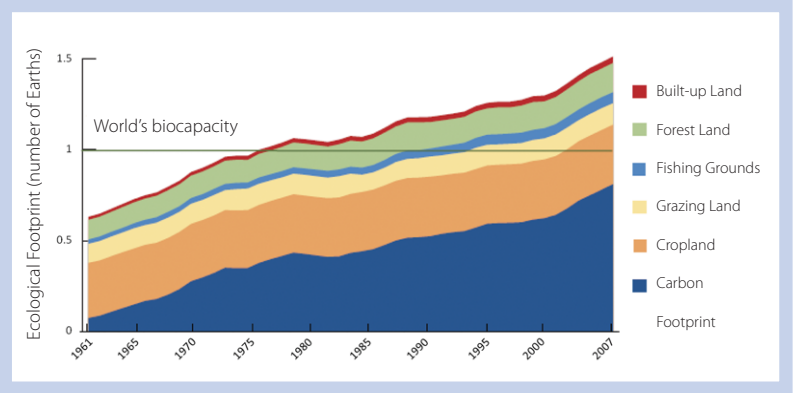

Figure 1-1 – World Trend of Ecological Footprint (in number of planets) shown through its component land types. ***Source: Global Footprint Network, 'National Footprint Accounts', 2010 edition.***

The Ecological Footprint can also help nations better understand the interconnectedness of materials (fish, trees, crops, etc.) and absorb a limited amount of waste (such as carbon dioxide pollution). Global Footprint Network quantifies this rate of output by measuring biocapacity – nature's ability to renew resources and provide ecological services. Biocapacity is as measurable as GDP – and, ultimately, far more significant, as access to basic living resources is essential for people's ability to rise above poverty. Up until now, we have treated biocapacity as an essentially limitless flow, to the point that our demand for nature's services now outstrips biocapacity regeneration by 50 per cent.

If the last era was about rapid gains and fast-paced development, alongside drawdowns in limited assets, the new era must be about securing long-term wealth. If the last half century was about expansion in the context of seemingly unlimited resources, the new era will need to focus on meeting human needs within the means of what ecosystems can provide. But this is only possible if societies have the right information to visualize the scale of challenges they are facing.

As Figures 1-1 and 1-2 illustrate, these challenges are substantial. The fraction of world biocapacity that most nations use has increased drastically in only a few decades. Global biocapacity has in-