



Pressures on land

[Climate change](#) and the impacts of [pollution](#) are disrupting soil nutrients, air temperatures and rainfall. Degraded land may no longer be suitable for agriculture, while sea level rise and erosion is putting coastal communities in danger. Of the available arable land, there are competing pressures from food and fibre production, energy generation and urbanisation. Also, unspoilt wild ecosystems and the few remaining areas where biodiversity is flourishing need to be protected – not only for their intrinsic worth, wellbeing and beauty, but also because they are vital in providing ecosystem services that we all depend upon, such as climate regulation through carbon capture. Land will always be crucial to meeting global resources needs (not just food, but energy, housing, lifestyle and consumption patterns). However, innovations such as urban farming and closed loop systems could take pressure off rural areas.

While there is less and less available land, the quality of remaining land is affected by largescale deforestation and the pollution of air, waterways and soil. Studies show that restoring just 12% of the world's degraded agricultural land could feed 200 million people by 2030, for instance, while strengthening climate resilience and reducing emissions. [1]

As global land is becoming less productive, many investors and countries are buying up swathes of farmland worldwide, attracted by rising commodity prices and rising resource demands of growing middle class. This may result in wide-scale land use conversion and threaten vulnerable biodiversity as well as the ability of the poorest communities to remain self-sufficient. It is therefore essential that systemic decisions are made, considering the wider impacts of how land is used and by whom.

Balancing the competing demands of food, fibre and fuel while providing enough space for wildlife and key ecosystems – and all within the context of climate change – will be a major challenge for all of society. While years of uses of chemicals and monocrop culture in agriculture have resulted in short-term productivity gains, they have had an adverse impact on soil health and biodiversity. It is thus important to understand what sort of agriculture is both most efficient and most resilient in the long-term. Furthermore, new monitoring technologies and comprehensive approaches to soil and water management such as land-based cooperatives could increase food production, protect forests and cut greenhouse gas emissions.

Last updated: 25 February 2016

Footnotes:

1. [Global Commission on the Economy and Climate \(September 2014\). New Climate Economy Report – Executive Summary, pg 2.](#)

Implications

- Ecosystems services, and our understanding of them, will increasingly underpin how, where and when we use land. WWF suggests that 12-20% of land will need to be set aside for biodiversity to ensure we get maximum productivity from the land we already use.
- With the need to feed a growing world population, the criteria for the effective use of agricultural land may eventually be re-evaluated. For instance, productivity could be measured by the nutritional value per unit of land instead of crop yield per unit of land. Agricultural land can also be planned to meet both food and energy needs, drawing on waste or bagasse for anaerobic digestion – giving farmers a second income stream.

- Recent research suggests that better land governance would provide us with enough productive forest and land for agriculture to meet demands for food, fuel, and fibre without further clearing of forests. [1] However, maintaining a “near zero” deforestation rate will require forestry and farming practices that produce more with less – i.e. less land, water, and pollution. This will in turn depend upon consumption patterns that meet the needs of the poor, while radically reducing waste and over-consumption by the affluent.
- A number of businesses now recognise the limits of certification and a farm-by-farm approach to sustainability. In future there will likely be increasing scrutiny and debate around how sustainable land use and mainstream sustainable agricultural practices can be achieved through voluntary and mandatory approaches to specific commodities (Roundtable on Sustainable Palm Oil (RSPO), Round Table Responsible Soy (RTRS), the Better Cotton Initiative (BCI) etc.) These could include sustainable landscaping, watershed management and ecosystem valuation.

Footnotes:

1. [WWF \(2011\)](#).

Current trajectory

- Agribusiness concentration: More than 80% of new agricultural land has come from intact and disturbed forests since 1980. The production and trade of the key forest risk commodities – palm oil, soya, beef and timber, pulp and paper - are the largest global direct drivers of tropical deforestation and degradation and have an estimated combined annual export value of over US\$134 billion dollars. These commodities are found in roughly 50% of the processed foods in supermarkets and are also used globally for biofuels, animal feed, plastics, resins, oils, cosmetics and hygiene products. [1] As a result, expansion of arable land to support growing populations comes at the expense of other land uses, such as forestry.
- Global expansion of cropland: A number of studies have calculated the expected cropland requirements for meeting future food, fuel or fibre demands, and estimates are available regarding the scale of future displacement for urbanisation and degradation. Aggregating modest estimates from key studies reveals that meeting all these different expectations would require a gross expansion of cropland of around 20 to 55% by 2050. [2]

Footnotes:

1. [The Global Canopy Programme \(2013, November\)](#).
2. [United Nations Environment Programme \(2014\)](#).