

Lecture 4. The Economy and the Environment

How is economy related to environment?

The links between the economy and the environment are manifold: the environment provides resources to the economy, and acts as a sink for emissions and waste. Natural resources are essential inputs for production in many sectors, while production and consumption also lead to pollution and other pressures on the environment. Poor environmental quality in turn affects economic growth and wellbeing by lowering the quantity and quality of resources or due to health impacts, etc. In this context, environmental policies can curb the negative feedbacks from the economy on the environment (and vice-versa). But how effective they are and whether they generate a net benefit or a net cost to society is the subject of much debate and depends on the way they are designed and implemented.

While the main mechanisms that link the economy and the environment are qualitatively known, assessments of environmental policies are often hampered by a lack of consistent metrics to compare the costs and benefits of policy changes, or by a more general lack of empirical evidence. The economic costs of biophysical and environmental consequences of policy inaction, and the associated benefits of new policies, are often not quantified. Therefore, economic discussions are often dominated by the very visible costs of policy action. Thus, it is essential to improve the toolkits that economists use to assess the benefits of environmental policies. This Global Forum aimed to shed some light on this important debate.

How does the economy affect the environment?

The production and use of goods can deplete natural resources and generate pollution. In addition to the scale of consumption increasing with income, the composition of what people consume changes, which could either exacerbate or offset their environmental footprint.

What is the relation between economy and environment?

Economic development without environmental considerations can cause serious environmental damage in turn impairing the quality of life of present and future generations. Sustainable development attempts to strike a balance between the demands of the economic development and the need for protection of the environment.

How does economic growth improve the environment?

Improved technologies, increased demand for environmental quality and improved government regulation are some of the mechanisms explaining why economic growth may actually lead to better environmental quality as countries get richer.

The economy: resource efficient, green and circular

Our well-being depends on using natural resources. We extract resources, and transform them into food, buildings, furniture, electronic devices, clothes, etc. Yet, our exploitation of resources outpaces the environment's ability to regenerate them and provide for us. How can we ensure the long-term well-being of our society? Greening our economy can certainly help.

Well-being is not easy to define or to measure. Many of us would mention good health, family and friends, personal security, living in a pleasant and healthy environment, job satisfaction, an income that ensures a good living standard as factors contributing to our well-being.

Although it may vary from person to person, economic concerns — being employed, earning a decent income, enjoying good working conditions — play an important part in our well-being. Considerations like job security or unemployment become particularly important in periods of economic crisis and can affect the morale and well-being of the society overall.

It is evident that we need a well-functioning economy that provides us not only the goods and services we need, but also jobs and income ensuring a certain living standard.

The economy depends on the environment

A well-functioning economy depends, among others, on an uninterrupted flow of natural resources and materials, such as timber, water, crops, fish, energy and minerals. Disruption in the supply of key materials can actually bring dependent sectors to a halt, and can force companies to lay people off or stop providing goods and services.

Having an uninterrupted flow implies that we can extract as much as we want. But can we really do that? Or, if we do, how does this impact the environment? How much can we actually extract without harming the environment?

The short answer is that we are extracting too much already, more than what our planet can produce or replenish in a given period. Some studies indicate that in the last hundred years the global per capita consumption of materials doubled, while that of primary energy tripled. In other words, every one of us is consuming on roughly three times as much energy and twice as many materials as our ancestors were consuming in 1900. And what's more, there are now over 7.2 billion of us doing so, compared with 1.6 billion back in 1900.

This extraction rate and the way we are using resources are actually reducing our planet's capacity to sustain us. Take the example of fish stocks. Overfishing, pollution and climate change have severely affected global fish stocks. Many coastal communities previously dependent on fisheries had to invest in other sectors, such as tourism. Those that have not managed to diversify their economy are struggling.

In fact, our economic activities are causing a wide range of environmental and social impacts. Air pollution, acidification of ecosystems, biodiversity loss and climate change are all environmental problems seriously affecting our well-being.

Going green and resource efficient

To preserve the environment and keep reaping the benefits it provides us, we need to reduce the amount of materials we are extracting. This requires changing the way we produce goods and services and consume material resources. In short, we need to green our economy.

Although the term has several definitions, 'green economy' generally refers to an economy where all production and consumption choices are made with the well-being of society and the overall health of the environment in mind. In more technical terms, it is an economy where society uses resources efficiently, enhancing human well-being in an inclusive society, while maintaining the natural systems that sustain us.

The EU has already adopted strategic goals as well as concrete action programmes to make its economy more sustainable. The Europe 2020 strategy aims to deliver growth that is smart, sustainable and socially inclusive. It focuses on employment, education and research but also on achieving a low-carbon economy with climate and energy targets.

The strategy identifies flagship initiatives to achieve these targets. The flagship initiative 'A resource-efficient Europe' plays a central role in the EU's policy in this area. A series of legislative packages are also adopted to implement its objectives.

But what do we need to do to make the EU economy resource efficient? In short, we need to produce and consume in a way that optimizes the use of all resources involved. Doing this entails creating production systems that generate decreasing amounts of waste or that produce more with less input.

Considering entire systems, not sectors

We also need to consider entire systems, rather than sectors. A system comprises all the processes and infrastructures that exist in connection with a resource or an activity, which are essential for human activities. For example, the energy system includes the types of energy we use (coal, wind, solar, oil, natural gas, etc.), how we extract or create this energy (wind turbines, oil wells, shale gas, etc.), where we use it (industry, transport, heating homes, etc.) and how we distribute it. It would also address other issues such as the land and water resources affected by energy use and energy production.

Products and residues out

To produce a good or a service, we need input. For example, to produce crops, in addition to their labour, farmers need land, grain, water, sun (energy), tools, and in modern agriculture, fertilizers and pesticide and more sophisticated tools. The same is more or less true of modern manufacturing. To produce electronic devices, we still need labour, as well as energy, water, land, minerals, metals, glass, plastics, rare earths, research, etc.

Most of the materials used in production in the European Union are also extracted in the EU. In 2011, 15.6 tons per capita of materials were used as input in the EU, of which 12.4 tons consisted of materials extracted in the EU, while the remaining 3.2 tons were imported.

A small share of these material inputs was exported. The rest — 14.6 tons per capita — was used for consumption in the EU. Material consumption varies considerably between countries. For example, the Finns consumed more than 30 tons per capita, while the Maltese consumed 5 tons per capita in 2011.

In the last decade, the EU economy created more 'value added' in terms of Gross Domestic Product for each unit of material (minerals, metals, etc.) consumed. For example, using the same quantity of metal, the economy produced mobile phones or laptops, which were more 'valuable' (in simple terms, 'worth more') than their predecessors. This is known as resource productivity. In the EU, resource productivity rose by about 20 %: from EUR 1.34 to EUR 1.60 per kg of material between 2000 and 2011. The economy grew by 16.5 % in this period.

Some European countries have a relatively high resource productivity. In 2011, Switzerland, the U.K. and Luxembourg created more than EUR 3 in value added per kilogram of materials, while Bulgaria, Romania and Latvia created less than EUR 0.5 of value per kilogram. Resource productivity is closely linked to the economic structure of the country in question. Strong service and knowledge-technology sectors as well as high recycling rates tend to boost resource productivity.

Circular economy

Current production and consumption processes do not only produce goods and services. They also produce residues. These can take the form of pollutants released into the environment, unused pieces of materials (wood or metal), or food that is not consumed for one reason or another.

The same holds true for products at the end of their utility period. Some might be partly recycled or re-used, but some end up in dumps, landfills or incineration. Given that resources were used for these goods and services, any part that is not utilized actually represents a potential economic loss as well as an environmental problem.

Europeans generated on average around 4.5 tons of waste per capita in 2010. Approximately half of this amount feeds back into the production process.

The term 'circular economy' foresees a production and consumption system that generates as little loss as possible. In an ideal world, almost everything would get re-used, recycled or recovered to produce other outputs. Redesigning products and production processes could help minimize wastage and turn the unused portion into a resource.

People and business ideas

The consumer and the producer are equally important players in greening our economy. The production process is geared to deliver what consumers want. But do we want to own more consumer products, or do we just want the services that the products provide?

More and more companies are adopting business approaches known as 'collaborative consumption'. This enables consumers to meet their needs leasing, product-service systems and sharing arrangements, rather than purchases. This might require a new way thinking about marketing and product design — with less focus on sales and more focus on making durable and repairable products.

The Internet and social media make such collaborative consumption products and services easier to find and use. And they do not need to be limited to borrowing tools from neighbors, booking a car from a car-sharing scheme or leasing electronic devices. Clothes libraries, where users can borrow clothes, also exist in some EU countries.

Any measure to reduce the rate of new extraction and the amount of waste, including boosting resource productivity, recycling and reusing, relieves the pressures on the environment and boosts our ecosystems' capacity to provide for us. The healthier our environment is, the better off and healthier we will be in turn.