



Sustainability tomorrow: Identifying challenges, analysing approaches and assessing future strategies

Video Transcript

Sustainability Today 1: Weak and Strong Sustainability

[Prof. Dr. Frank Krysiak] I will now introduce an idea of sustainability that stems from academic analysis, but that is also used to measure sustainability in practice. This idea is a capital-based approach towards defining and measuring sustainability.

One key element of sustainability is intergenerational justice. But what is «intergenerational justice»?

One possible way to define intergenerational justice is to say that a development is «intergenerationally just» if it ensures that no future generation is worse off than the generations that lived before. If we measure well-being, by preference satisfaction, this implies that a development is «intergenerationally just» if every future generation has at least the same opportunities to satisfy its preferences as the generations that lived before.

We can envision this by considering a sequence of generations where each successive generation is at least as satisfied with its life as the generations before. How can we ensure such a development? How do our decisions today influence the well-being of future generations?

This link between generations is what economists call «capital». In other words: investments, resources, and knowledge that can be passed on to the next generation.

If we pass on the world in the same state as we got it from our parents, the next generation will have the same opportunities as we had to live a good life. To do this, we have to make sure that all natural resources, all accumulated knowledge and all man-made capital goods are passed on to the next generation in exactly the same state and quantity as we received them from our parents.

This would ensure that development is «intergenerationally just». However, this is a drastic requirement. It would imply that we could not use a single drop of oil, a single cubic metre of natural gas, or cut down a single tree that will not regrow within one generation. Development might be just, but, most likely, everyone would live a miserable life.



This has led to the idea of substitutability. If we can substitute one type of capital, let's say raw oil, with another one, let's say ideas for building more efficient cars, in a way that makes sure that every future generation is happy with this replacement, we also have a sustainable development.

The key question is: to what extent can we substitute different types of capital?

The concept of «weak sustainability» presumes that we can substitute different types of capital almost completely. We are allowed to replace natural capital, like oil or forests, almost completely by man-made capital, such as production plants or ideas. What we are doing here is aggregating different types of capital into a single «joint capital». This «joint capital» measures the value of everything that we pass on to future generations. As long as the stock of this «joint capital» does not decrease, we call a development «weakly sustainable».

This concept is used, for example, by the World Bank in their indicator of «adjusted net savings». The World Bank measures the loss of natural resources, such as smaller forests, smaller reserves of oil and natural gas, and investments in education or production facilities. If the investments outweigh the losses in natural capital, the concept of «adjusted net savings» indicates a sustainable development.

However, many scientists argue that if we reduce natural resources substantially, for example, cut down most forests on this planet, we endanger essential services provided by ecosystems. Thus, in their view, the idea of weak sustainability is based on the false assumption that we can live without natural resources.

A different idea is «strong sustainability». This concept is based on the assumption that different types of capital cannot be substituted against each other and therefore have to be preserved separately. We have to maintain not a single capital stock, but different types of capital.

The problem is that we simply cannot know to what extent we can substitute different types of capital and we cannot test this in a simple way. To solve this problem, different ideas have been developed. One idea that we use here in my research group is to account for this uncertainty.

In our view, sustainability means to reduce the risk of harming future generations. The more we aim to bring this risk down to zero, the closer we get to strong sustainability. However, we do not know for sure what harms and what benefits future generations. This limits our options of making changes that would benefit all generations.

Thus, it might be a good idea to accept some risk of harming future generations in order to experiment with changes that might result in a better world. The key question then is no longer about substituting different types of capital, but rather about how to balance the risks and opportunities of development.