

Topic 14: Sustainable Development

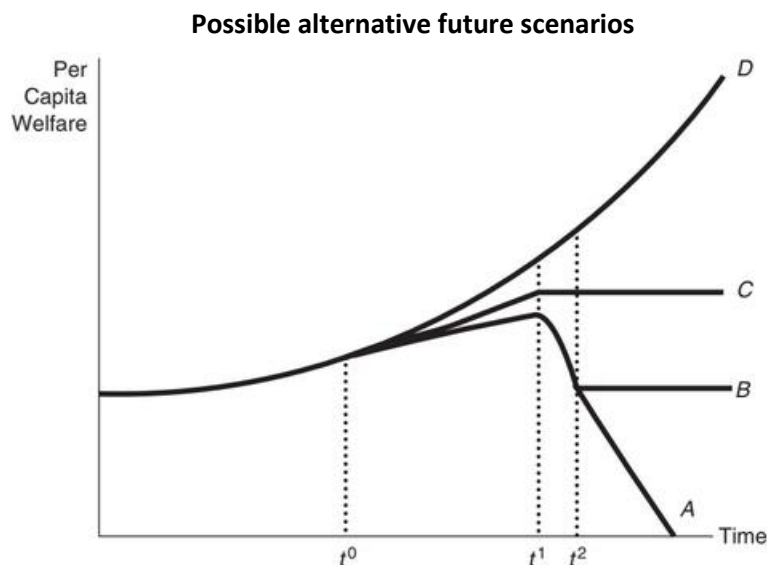
1. What is sustainable development?

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

(World Commission on Environment and Development, 1987)

Three dimensions of sustainable development

1. The existence of a positive level of welfare – if positive sustainable welfare level is possible.
2. The magnitude of the ultimate sustainable level of welfare compared to current welfare levels -- if ultimately sustainable welfare level is higher than the current level, radical surgery to cut current living standards is not necessary.
3. The sensitivity of the future level of welfare to actions by previous generations – whether the ultimate sustainable level of welfare can be increased or decreased by the actions of current generations. If yes, the sustainability criterion would consider these impacts on future generations when considering policies. Current generations can affect the sustainable welfare levels of future generations both positively and negatively
 - a. Current actions that reduce future welfare levels include i) fossil fuel combustion that could modify the climate to negatively affect future agriculture ii) emissions that deplete the atmosphere’s ozone can raise the incidence of skin cancer in future generations iii) the storage of radioactive wastes could increase the likelihood of genetic damage in the future, reducing future medical discoveries.



Scenario D - Sustainable growth path

- Exponential growth in the future can be achieved such that both current welfare levels and the growth in welfare would be sustainable. The concern for intergenerational justice would favor current generations as they would be poorest. There is no need to worry about future generation if unlimited growth were possible. However, this scenario is generally infeasible.

Scenario C – Sustainable welfare levels

- In this case, the growth slowly declined until it reaches zero at a steady state. The welfare of each future generation is at least as well-off as all previous generations, so current welfare levels are sustainable (though the growth is not). In this case, the constraints on growth would be unnecessary and that constraining growth would injure all subsequent generations.
- However, it requires actions to assure the maintenance of a sustainable level of welfare, still less drastic compared to Scenario B below.

Scenario B – Unsustainable level of welfares

- In this case, initial growth is followed by a steady state at the level lower than the current level. Future generations are worse off than previous generations. Neither growth nor welfare levels are sustainable at current levels. This requires sustainability criterion or policy that transform economy so that the earlier generations do not benefit themselves at the expense of future generation.

Scenario A – Zero sustainable level

- In this case, only possible sustainable level is zero. All consumption by current generation serves simply to hasten the end of civilization. This requires serious constraints on growth.
- The existence of renewable resources, the nature's ability to assimilate a certain amount of waste, etc. rule out this scenario (guaranteed the existence of positive sustainable welfare level).

**Q: Are we pursuing the path that enriches current generations?
at the expense of future generation?**

2. Market allocations and efficiency

The following market imperfections can interfere with the quest for sustainable development.

- **Open access to resource:** Allowing open access to resources can promote unsustainable allocations – diminished stocks left for the future or even led to extinction of some harvested species

- **Intertemporal externalities:** Undermining the ability of the market to produce sustainable outcome. For example, emissions of greenhouse gases impose a cost on future generations that is external to current generations while current actions to reduce the gases will impose costs on current generations at the bulk of benefits to be perceived significantly in future years.
- **Market power:** Exacerbate the problem of sustainability such as cartelized natural resource markets.

Efficient markets do not necessarily guarantee development that can be sustained -- restoring inefficiency is desirable but can be inefficient as a means for producing sustainable welfare levels. Economic incentive policies can facilitate the transition from unsustainable to sustainable activities, recognizing the power of the market forces.

3. Measures of development

- Conventional measure using **GDP** (gross domestic product) – limitations to represent welfare.
- Alternative measures such as
 - **Ecological footprint:** Measure the amount of renewable and nonrenewable ecologically productive land area that is required either to support the resource demands or to absorb the wastes of a given population.
 - **Human development Index:** Indicate that relationship between income growth and the well-being of the poorest citizens of the world is far from a sure thing, depending on if the growth increases sustainable investment in education, health care and social programs accessible to the poor.
 - **Gross national happiness:** Guide development in Bhutan, considering dimensions such as psychological well-being, time use, culture, health, education, environmental diversity, living standard, governance, etc.

Understanding the Dimensions of Sustainable Development:

<https://www.youtube.com/watch?v=pgNLonYOc9s>

The UN's sustainable development goals: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Reference: [TL] – Tietenberg, T. and Lewis, L. Environmental Natural Resource Economics, 2015 (10th edition), Pearson, Chapter 20.