

# Sustainability of Swiss Chocolate Production

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Thursday 15<sup>th</sup> May 2014, 10:45 – 12:50, room: Shanghai 3/4

The value of the sustainability concept, and underlying concepts such as ecosystem services and footprints, for environmental management is best demonstrated when related to an actual case. As a follow-up on the successful 'Whisky Session' held at the 23<sup>rd</sup> annual meeting of SETAC Europe in Glasgow the Sustainability and Ecosystem Services Advisory Groups propose to organise a special session on the Sustainability of Swiss Chocolate Production.

The main ingredient of chocolate are cocoa beans, the fruit of cacao trees. The production of cocoa beans depends on a wide range of goods and services from ecological systems, such as nutrients from the soils, water and shade from the forests, and on the local agrarian society. These localized production systems connects to the global economic system through commerce, finance, and regulation. The high and still growing demand for cocoa beans is a threat to soil fertility and stimulates the farmers to use artificial fertilizers and pesticides. Older strains of cacao trees needed shade from the natural forest. New strains have been developed that allow a second harvest of beans, and are more sunlight tolerant which induces farmers to cut down the shade trees and plant more cacao trees (Filou & Kenny, 2011, [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=7135](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7135)).

Cocoa beans are grown in Africa, South America and South-East Asia (see fig. 1) and need to be imported in Switzerland, raising (land and carbon) footprint issues. As a result of the increasing demand for sustainable production, cocoa bean growing has been subjected to critical studies on environmental and social aspects. Life Cycle Analyses have been performed for milk production, needed for milk chocolate, in Switzerland.

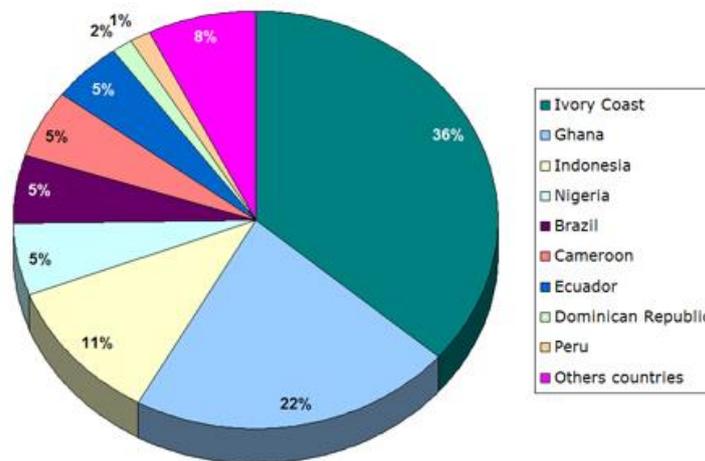


Fig. 1. Cocoa harvest 2011-2012. Source: International Cocoa Organization, Bulletin No. 4, November 2012.

Switzerland has a market economy based on international trade and banking. Agriculture employs less than 5% of the population, and since only 10% of the land is arable, the primary agricultural products are cattle and dairy goods (especially cheeses); grains, fruits, and vegetables are also grown, and there is a large chocolate-processing industry. Mineral resources are scarce, and most raw materials and many food products must be imported. Tourism adds significantly to the economy. Electricity is generated chiefly from hydroelectrical and nuclear power sources (<http://www.infoplease.com/encyclopedia/world/switzerland-economy.html#ixzz2bAvMBkBF>). The annual sale of Swiss chocolate and related products was 172,376 tonnes in 2012, of which 60% was exported to 144 countries. The sales have been stable over the past years. The Swiss chocolate industry employed approximately 4300 persons in 2012 ([www.chocosuisse.ch](http://www.chocosuisse.ch)).

The production of chocolate is an ideal topic to show the integrative dimensions of sustainability, ecosystem services and footprint concepts. The session will address the following topics:

- The ecosystem services associated with chocolate production (cocoa beans and milk)
- Environmental footprints of Swiss chocolate production
- The social-economical importance of the chocolate industry in Switzerland
- Human health aspects of chocolate consumption
- Sustainability of the industry
- How do the flow of goods and services from ecological systems connect to sustainability?

The session is planned for 120 minutes and will consist of 4-5 presentations and a discussion. Given the integrative character of the session, we believe this topic most suitable for a special session. The session might attract participants active in the fields of sustainability, systems ecology, ecosystem services, environmental footprints, tropical forestry, land degradation, biodiversity, life cycle analysis, and human health issues.

Keywords: Sustainability, ecosystem services, footprint, social – ecological societies

**SESSION TYPE:** Platform (invited speakers) and Poster

**ADVISORY GROUP:** Advisory Group on Sustainability and the Ecosystem Services Advisory Group