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New consumer app scores protein products for sustainability

A smartphone app has been designed to help shoppers choose more environmentally-friendly protein-rich products, namely meat, vegetarian alternatives, eggs and dairy products. The methods and data used to measure these products' lifecycle environmental impacts are presented in a recent study.

In recent years, various apps have been designed to help consumers shop more sustainably by providing information about products' environmental credentials. The Questionmark[1] is one such app, developed in the Netherlands by an animal welfare NGO in collaboration with an environmental consultancy. Aimed at the Dutch market, it enables consumers to use their phones to scan the barcodes of over 19 000 protein-rich products commonly found in supermarkets. An overall sustainability score is presented for each product, plus further individual scores for human health, climate change, biodiversity, animal welfare and social impacts.

For each item, the app also lists a range of alternative, but similar, products, giving the user an opportunity to make a more sustainable choice. For example, if a user scans a packet of pork chops, other meat products and vegetarian alternatives, such as veggie burgers, will appear, along with their scores.

In this study, the researchers describe their lifecycle impact approach used to calculate sustainability scores. This covers production processes from cultivation to the supermarket shelves. They first developed a database of information regarding the production of 106 protein 'base products', which are used to produce the 19 000 branded goods covered by the app. These data came from previous research and included fertiliser use, manure's greenhouse gas (GHG) emissions, land use change, transportation distances, biodiversity of farmland and refrigeration.

Using the database the researchers quantified the environmental impacts of each of the 106 products, using a modified version of the lifecycle method ReCiPe[2,3]. Sustainability scores are shown to vary considerably between product groups, but also *within* groups. For example, average scores for beef and veal products are poor across all three impact categories, but Brazilian beef is rated 70 times worse than beef from Dutch dairy cattle.

The negative impacts of Brazilian beef can be attributed to several factors, including destruction of rainforest to make way for soy cultivation (used to feed livestock) and cattle ranching. Furthermore, Brazilian cattle live longer than Dutch cattle, which results in higher methane emissions per kilogram of beef. This contributes to poor scores for climate impacts (the GHG emissions), and for biodiversity, calculated as annual number of species lost per affected hectare, for every kilogram of product.

The main factors affecting climate and biodiversity impacts include livestock management, feed (with soy a particular culprit) and GHG production by cattle and sheep. Human health effects are measured in DALY (disability-affected life years) per kilogram from environmental damage (rather than from consuming the product) and is strongly affected by air pollutants from fertilisers and transport emissions. Lamb, beef and veal perform poorly in the health category, owing to nitrogen emissions from the pasture.

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Read more about:
Environmental technologies, Environmental information services, Sustainable consumption and production

1.www.thequestionmark.org

2.www.lcia-recipe.net

3.Further details of the methodology used to develop the app are also available in this report, free to download: www.cedelft.eu/?go=home.downloadPub&id=1264&file=2329_finalreportMHSD_1339077247.pdf

For more information regarding development of Product Environmental Footprints in the EU see: http://ec.europa.eu/environment/eussd/smgp/product_footprint.htm