



STeP

Sanitation Technology
Platform

VALUING BYPRODUCTS

MARCH 2018

The Sanitation Technology Platform

Please Note: This report is a good faith effort by RTI International to accurately represent information available via secondary and primary sources at the time of the information capture. The report is confidential and proprietary and only for internal uses and not for publication or public disclosure.

STeP has adopted a basic approach to valuing byproducts that can be replicated in many contexts.

Introduction

The value of byproducts produced by a sanitation technology can have a material impact on the technology's economics. However, placing a value on a byproduct can be tricky. In the course of several projects, STeP and our partners have gained some experience that could be useful to others just starting out in this area. The purpose of this brief note is to share that

experience. We have also gathered data on a small selection of byproducts, which you can find on the STeP website.

The Basic Approach

The logic STeP uses to estimate the value of a byproduct is straightforward—the table describes this logic and provides an associated example.

Steps	Example
1. Identify the application/use of the byproduct	An OP supplying electricity to a co-located sewage treatment plant (STP)
2. Establish the alternative product that would otherwise be used in this application	Retail electricity supply from the local grid
3. Establish the price of the alternative product	Local energy tariffs for the STP are 10 U.S. cents / kWh
4. Assume the value of the byproduct is approximately equal to the value of the alternative product	Electricity produced by the OP is worth ~10 U.S. cents / kWh

Analyzing byproducts in more specific contexts can lead to some nuances—and opportunities!

While this basic approach works in general, various nuances emerge, particularly as you start exploring more-specific contexts such as looking at a specific city or site.

(1) What would your technology really be displacing?

An example best illustrates this challenge: If a sanitation technology generates electricity, it could be sold to a customer at that same site, in which case it would be displacing retail electricity. If, however, the electricity was exported to the local grid, it would only be displacing wholesale electricity. Given the potentially large difference between retail and wholesale prices, this consideration can be important.

(2) Are there higher-value applications for your product?

The byproducts from a sanitation technology are mostly commodities—and are priced accordingly. However, it can be worth exploring whether there are niche applications that might yield a higher value. Distilled water, which can be produced by some omni-processors, is a great example. See the reports on STeP's website for further details.

(3) Comparing with a "like-for-like" scope

Care needs to be taken to ensure that the byproduct and the

alternative product it is displacing are compared on a like-for-like basis. For example, if the product is a fertilizer, it might be compared with 25 kg bags of packaged fertilizer available at a local agricultural retailer (sold at retail prices). However, to make this a like-for-like comparison, it would be necessary to factor in (at least) the packaging and shipping / distribution costs. Alternatively, it might be possible to find fertilizer "factory gate" prices for a bulk fertilizer product.

(4) What if the displaced product has no value?

Occasionally a displaced product can have no associated direct, explicit monetary value. A simple example is heat used at commercial or light industrial facilities. Often, that heat is not purchased at a specific cost (e.g., 1 U.S. cent / kWh of heat) because it is generated on site. A reasonable way to approach this situation is to work backward up the supply chain until a set of inputs that do have values associated with them can be identified. For example, with heat, it is only necessary to go one step up the supply chain to identify the costs associated with the capital and operating costs (including fuel costs of a boiler) incurred to generate heat.