

## SUSTAINABLE WASTE

### Is Resource Recovery from Waste Sustainable?

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“Sustainable” is the latest buzz word, at least regarding clean energy in California.

But what IS this thing, “Sustainability”? The more I understand about what everyone thinks it means, the less it makes sense. Let’s take a closer look at a random few of the definitions.

A simple definition for the term “Sustainable”, per [Merriam-Webster](#): “(1) *Capable of being sustained; and (2) (a) of, related to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged, and (b) of or relating to a lifestyle involving the use of sustainable methods.*” *Sustain*: to keep up, or prolong. The definition created in 1987 at the World Commission on Environment and Development (the Brundtland Commission) in the context of environmentally friendly development is “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Let’s remember this one.

It probably isn’t necessary, but let’s go ahead and also define a few waste management terms. Under the Waste Framework Directive (European Directive 75/442/EC as amended), the European Union defines waste as “*an object the holder discards, intends to discard or is required to discard.*” California’s CalRecycle defines waste as “*objects or materials for which no use or reuse is intended.*” To clarify that one, “reuse” is using an object again with only minor change. Reuse is not recycling, because “*recycling alters the physical form of an object or material.*” A recyclable object is still waste until it has been recycled. Recovery is defined internationally as “*any waste management operation that diverts a waste material from the waste stream and which results in a certain product with a potential economic or ecological benefit*” (OECD-Eurostat).

The goal here is to determine whether we can “sustainably” use waste to make energy, fuels and green products. For perspective, we need to see what Sustainability initiatives are doing in other sectors; “sustainability” assessments will come around to municipal waste recovery and conversion soon enough. For example, the [Council on Sustainable Biomass Production](#), presently working on agriculturally-sourced sustainable biomass production, plans to address forestry next and last, begin their work on sustainable segregation and aggregation of the biogenic fraction of urban wastes and bi-products. Stay tuned; we should see that come up for public review sometime next year.

*Sustainable Agriculture*: More effort seems to be directed toward this sector than any other. The [Keystone Alliance for Sustainable Agriculture](#)’s “Field to Market” program defines sustainable agriculture as (1) meeting the needs of the present while improving the ability of future generations to meet their own needs, (2) increasing productivity to meet future food demands; (3) improving environmental impacts; (4) improving human health; and (5) improving the economic and social well-being of agricultural communities. Similarly, the [Leonardo Academy](#) has been requested to develop a “comprehensive, continuous improvement framework of economic, environmental and social metrics” for agricultural standards, and work these through the ASTM International’s rigorous process.

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*Sustainable Fisheries:* According to California Assembly Bill [AB 1217](#) that was signed into law last year: “Sustainable and sustainability mean both of the following: (1) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability, and (2) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, while maintaining biological diversity.” This bill prohibits seafood produced through aquaculture or fish farming from being certified as sustainable until nationally or internationally accepted sustainability standards have been approved (which haven’t been developed yet).

*Sustainable Forestry:* Regulations for forestry sustainability on US federal lands have as their source the 1982 Forest Practices Act, one of the earlier federal documents to stipulate a form of sustainability; a sound, deeply referenced review can be found at [www.fao.org](http://www.fao.org). The 1982 Act stipulates methods that create a sustainable yield of merchantable timber, not exactly what’s on everyone’s minds these days when they think of National Forest sustainability. Many are working on more progressive sustainable biomass management methods now, including the Forest Service itself: the Interagency Forest Working Group ([IFWG](#)) is tackling the most contentious aspects, with vigor. On the non-profit side, the Sustainable Forest Initiative ([SFI](#)) and the Forest Stewardship Council ([FSC](#)) appear to be in the lead, in the USA.

*Sustainable BioFuels:* In November 2009, the [Roundtable on Sustainable Biofuels](#) (RSB) released Version One of the RSB Principles & Criteria (P&C), an international standard for better biofuel production and processing, an associated guidance document, detailed compliance indicators, and a glossary of terms. Curiously, their [Glossary](#) does not contain a definition of the terms “sustainable” or “sustainability” ...instead, the RSB Principles & Criteria describe the “*fundamental requirements of a sustainable biofuel production, such as the need to include local stakeholder consultation, meet minimum Greenhouse Gases performance, ensure conservation of important ecosystems and mitigate food insecurity in the region of operation.*” In 2010, the RSB Standard was pilot tested in biofuel supply chains throughout the world. The resulting feedback was analyzed and new language was added to the P&C, which was released as Version 1.1 for public consultation. See my formal comments filed to the RSB [here](#).

*Corporate Sustainability:* Examine the [Dow Jones Sustainability Index](#) for what is meant by sustainability in the business world. Each year, the Index ranks around 2,500 sustainability-driven companies using criteria such as codes of conduct, corporate governance, risk and crisis management, labor practice indicators, environmental and social reporting, and industry specific criteria. According to Dow Jones, “*Corporate sustainability is a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments. Corporate sustainability leaders achieve long-term shareholder value by gearing their strategies and management to harness the market’s potential for sustainability products and services while at the same time successfully reducing and avoiding sustainability costs and risks.*” The resulting index ranks companies which succeed at operating both sustainably and economically.

An excellent [presentation](#) by Dr. Stephen [Kaffka](#) of UC Davis before the California Energy Commission last year suggests: “*The debate over sustainability means discussing the implications of different choices when looking for compromise solutions between two pressures:*

1. *Economic pressure driving further intensification (higher rates of throughputs per acre and per hour of labor), and*
2. *Ecological limitations or pressure to reduce the rate of throughput because lower input systems may have less local environmental impact.*”

Dr. Kaffka sums up that “*Sustainability means flexibility, the ability to adjust to the unexpected.*”

Almost all efforts toward sustainability thus far seek voluntary compliance. Most still lack a ready market value for the resulting certification, although the fiscal impact on profit and shareholder returns may indeed be one of the more realistic “indices” of sustainability. Yet the California fisheries bill above is an example of “sustainability” criteria becoming law: what is voluntary compliance today may well be Policy tomorrow, and Regulation by next Tuesday. One camp says this is just another government attempt to save us from ourselves; another camp says that sustainable is simply not enough. These opinions are not of necessity, mutually exclusive. We can act to nudge things into a better position, if we don’t try to move

## SUSTAINABLE WASTE

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the Mountain all at once ... "Incremental Mitigation" is the operative term, for an approach that can get us beyond sustainability.

Looking at California's idea of Sustainable Energy, we find as an example that staff interpretations of [Section 3101.5 of AB 118](#) have provided the basis for [project proposal evaluation](#) for those seeking grants. In general, the "Sustainability Criteria" currently [under-development](#) methodically reviews each key environmental and social arena, looking for indications that project proponents have (a) compared the Life Cycle impacts of what they propose to standard practice, and (b) found third parties that can certify that their actions are sustainable.

California's AB1217 that signed sustainable fisheries into law, calls for "continuous replacement of resources". In the case of municipal waste, we have continuous generation, so let's not make the mistake of considering "waste" to be a resource that needs protection. The sustainable goal for waste is to continuously USE it as fast or faster than it is being generated, and avoid stockpiling it in landfills or otherwise disposing of it as we do now. Recycling is an acceptable use of waste that is supported by law. Recycling however, doesn't even make a dent in the continuously generated waste stream, and much of that waste is not recyclable. Waste can, however, be considered feedstock for conversion to renewable energy. Recovery in this manner will turn the remaining waste into a resource, making resource recovery of waste a sustainable goal.

Consider the utilization of waste vs. virgin feedstock in the manufacture of sustainably produced renewable energy. Here we can effect both a reduction in existing environmental damage and an improved alternative to current practice, by selectively favoring waste conversion to energy. Using waste as feedstock for production of energy converts a liability into an asset at numerous environmental, social and economic levels. Agreeing to qualify energy, fuels, and "green chemicals" made from waste as meeting "sustainability" criteria can provide one more real incentive for Resource Recovery.