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E3S Web of Conferences

Volume 202 (2020)

The 5th International Conference on Energy, Environmental and Information System (ICENIS 2020)

Semarang, Indonesia, August 12-13, 2020

B. Warsito, Sudarno and T. Triadi Putranto (Eds.)

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E3S Web of Conferences • *Open Access* • Volume 202 • 10 November 2020 • Article number 05001 • 5th International Conference on Energy, Environmental and Information System, ICENIS 2020 • Semarang • 12 August 2020through 13 August 2020 • Code 164805

Document type

Conference Paper • *Gold Open Access* • *Green Open Access*

Source type

Conference Proceedings

ISSN

25550403

DOI

10.1051/e3sconf/202020205001

Challenges and Opportunities in implementing leachate recirculation in Indonesia: Technical aspects

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Abstract

Sanitary landfill is the most commonly used way to process municipal solid waste (MSW) in most countries including Indonesia . Sanitary landfill system produces leachate which contains a lot of inorganic pollutants, heavy metals, dissolved organic matter, and xenobiotics. Most leachate treatment plants in Indonesia consist of stabilization ponds, aeration ponds, anaerobic ponds, maturation ponds, and tertiary treatment such as wetlands. A small part of waste water treatment plant (WWTP) consists of equalization tanks, facultative bodies, aeration tanks, polishing pools, sedimentation tanks, chemical and biological processing tanks, mud ponds and sand filters. In fact, leachate was found at depths of 4, 9, 15, 20, 30 m in final processing site in the Gampong Jawa,

E3S Web of Conferences 202, 01003 (2020) https://doi.org/10.1051/e3sconf/202020201003
ICENIS 2020

Life Cycle Thinking for Sustainable Consumption and Production towards a Circular Economy

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Abstract. The current model of a linear economy with end-of-pipe waste treatment is not sustainable. Cleaner production helps reduce resource use and emissions, but is still not an optimal solution without considering a life cycle perspective. Life cycle-based tools such as life cycle assessment and life cycle costing are useful for identifying optimal environmental and economic options for product systems. SDG 12 dealing with responsible consumption and production is key for sustainability. Developing ~~of~~ a circular economy requires life cycle thinking and life cycle-based tools for assessment. All these issues are discussed along with illustrative examples.

1 Introduction

Every activity is associated with some consequences; the desired objective of the activity usually leading to some benefit to society but also with some undesired outcomes which are unplanned, but inevitable. In practice, thermodynamics does not allow us to break even and we will end up losing some utility whenever there is an activity or transformation. Activities in nature must also follow this law, but a decrease in entropy is powered by energy from the sun. Activities in nature are part of ecosystems, large and small, which are very delicately but efficiently balanced in a way that there is no waste per se. All elements/substances move in cycles which is, for example, easily evident in the hydrological cycle which represents the cyclic movement of water on earth. There are many such biogeochemical cycles for nitrogen, sulphur and so on. Industrial activities, on the other hand, have largely been developed in a linear format – so called take, make, use and dispose (Figure 1). We take valuable resources from nature, transform them to products which are then used and finally go back to nature in the form of waste – solid, liquid or gaseous. The loop is not "closed". Hence, every activity must somehow lead to some form of pollution being produced.

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A Geomorphic Framework for the Analysis of Microplastics in Riverine Sediments

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Abstract. The wide-spread use and persistence of plastics in the environment have placed them on the list of significant emerging pollutants. In contrast to marine environments, the analysis of plastic debris, including microplastics (particles <5 mm in maximum diameter), in freshwater systems is limited, and even fewer studies have examined microplastics in riverine sediments. Nonetheless, it has become clear that microplastics are now a ubiquitous component of riverine ecosystems and their distribution is dependent on anthropogenic inputs and the physical and chemical processes that control their transport, transformation, and deposition along the drainage network. In many ways, the transport and fate of microplastics will parallel that of other particulate matter that has been extensively studied for at least the last 50 years. Here, we briefly explore the application of a geomorphic approach to the assessment of sediment-contaminated rivers to the microplastic problem, and argue that future studies can significantly benefit by incorporating the principles of this approach into their analyses.

1 Introduction

The ability to mold synthetic polymers (plastics) into an infinite variety of shapes, combined with their versatile nature in terms of weight, strength, durability, melting point, and chemical reactivity have made them virtually indispensable in modern manufacturing. There are about 20 distinct groups of plastics that are extensively used in everything from cosmetic products and cleansers to clothing, to plumbing, to packaging and ropes, among a host of other products. The development of synthetic polymers began in the late 1800s [1], but it was not until the 1950s that plastics were produced on an industrial scale. Since then, plastic production has increased exponentially, reaching 359 million metric tons [2], and is expected to increase significantly in the coming years [3].

Unfortunately, plastics released to the environment represent a significant emerging pollutant found in atmospheric, terrestrial, freshwater and marine systems. Microplastics (MPs), in particular, have received considerable attention as a global pollutant. While the definition of what constitutes a MP is a topic of debate, the most widely used definition is any plastic item measuring <5 mm in its maximum (long) dimension, a size that can be

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E3S Web of Conferences **202**, 01001 (2020) https://doi.org/10.1051/e3sconf/202020201001
ICENIS 2020

Faith and development: The role of local religious organization in community change in Papua

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Abstract. Religious organizations have an important role in development aid. For a long time, this role was not acknowledged by the main players in the development arena, but this has changed over the last few decades. Yet, this role is not without tensions, as in particular western donors hold secular perspectives on development and find it hard to deal with organizations that want to provide help as well as spread their religion. In this study, I review the literature on faith-based organizations (FBOs) and present a case-study of how churches in rural areas of Indonesia's Papua province fulfill key roles in local development. To come to a fruitful cooperation between large development organizations and such indigenous churches, an important condition is that the role of religion in daily life of these Papuans needs to be acknowledged.

1 Introduction

In 1998, the World Bank's president James Wolfensohn started the World Faiths Development Dialogue (WFDD) as an independent think-tank and established a 'Directorate on Faith' within the World Bank. Both initiatives targeted to facilitate the cooperation between development donors such as the World Bank and faith-based organizations (FBOs). Soon, these initiatives received broad criticism, as many were afraid this would blur the boundaries between church and state [1]. Despite these criticisms, the World Bank has initiated – or exemplified – a trend towards involving FBOs more in the development agenda. At the same time, the criticism around the role of FBOs remains the same: blurring church-state boundaries, only linked to one faith-group, evangelism, et cetera. In this study, I will first review the role of faith-based organizations in local development and next present a case study of how churches help in developing local communities the Papua province in Indonesia.

2 Development aid and religion

For a long time, FBOs did not get much attention in development aid policies and studies. The main opinion was that development aid policy should focus on economic aspects:

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E3S Web of Conferences **202**, 01007 (2020) https://doi.org/10.1051/e3sconf/202020201007
ICENIS 2020

Every Drop of Water Footprint Counts For Humanity

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Abstract. Since 2002, Water Footprint concept was developed by Hoekstra as an indicator of water use behind all the goods and services consumed by one individual or the individuals of a country, more new concepts and definition evolved to 'The water footprint is a measure of humanity's appropriation of fresh water in volumes of water consumed and/or polluted'. Water Footprint answers how earth's limited freshwater resources are being consumed or wasted through pollution or by misuse, abuse and disuse. At the highest level of United Nations, there are Sustainable Development Goals 2030 to achieve development programmes such as 'Leaving No One Behind'. From nations to corporations, reduce Water Footprint contributes to sustainability and in shrinking the Carbon Footprint to conserve energy with less wastages, less wastefulness at all levels. Less Water Footprint, Less Carbon Footprint and Less Global Warming. Every individual as a stakeholder can realise and practise stringently the concept of Every Drop Counts. Developed countries like Singapore consumed more water and yet with widespread education, study found that 'Saving water less of a concern for younger residents'. The author and co-author provide mentorship/internship to Universities and Polytechnic to learn 'Every drop Counts' from concept of Water Footprint. The mentees/interns were driven on learning by listening and undertaking hands-on-real-life measuring individual Water Footprint at their 3-month internship venue called The Living Lab. They collected and used every drop of water drips from the taps in the Living Lab to imbue the true meaning of Every Drop Counts for life-long. Every individual, home, corporation as well as every country when practises water-saving for proper use contribute to humanity. The youngsters and the educated must listen, learn, contribute and secure mother earth's environment.

1 Introduction

The poem, [1] *Rhyme of the Ancient Mariner* has this part stanza,

Water, water, every where,
And all the boards did shrink;
Water, water, every where,
Nor any drop to drink.

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