

Summary

Suggestions on Driving Circular Economy

SD SYMPOSIUM 2020

Circular Economy: Actions for Sustainable Future

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Summary

Suggestions on Driving Circular Economy

SCG organized SD Symposium 2020 “Circular Economy: Actions for Sustainable Future” on November 9th, 2020. A month prior to the event, SCG invited over 200 participants across sectors including the public sector, the private sector, academia, communities, and the young generation to brainstorm for solutions to solve environmental issues through Circular Economy with an aim to propose suggestions on driving Circular Economy in 4 dimensions:

1. Water Reuse Management: During the preparation for the severe drought crisis in 2021, it is evident that Thailand will be able to store only 7-8% of water resources which is insufficient for water consumption nationwide. Therefore, **the solution is to manage for landscape arrangement and use technology to enable a “water reuse management”** that is sufficient for the needs of each community while providing agricultural knowledge to increase crop yields and develop wholesale markets for farmers and locals who have returned to their hometowns. While the private sector has collaborated to support a number of communities in generating stable and sustainable income, it may not be in time for the impending water crisis. Therefore, **SCG proposes the government to play a key role for the expansion of the “water reuse management” project nationwide** which will alleviate water shortages, revive local economies, and boost the yields of Thai agricultural products so that the nation can serve as the world’s kitchen.

2. Agri-Circular Economy: To address issues such as drought, pollution from waste incineration, and low crop yields, it is necessary to promote farmers to adhere to the “100% incineration-free” policy in 2022 in order to lower PM2.5 and mitigate global warming while generating more income for farmers by reusing leftover materials such as rice straw, sugarcane leaf, and corncob and transforming them into biomass, animal feed, and packaging, which could generate 25 billion baht for farmers per year. Moreover, it is necessary to promote technologies utilization to increase crop yields that do not require farmers’ ownership by establishing community funds so that farmers can access innovative agricultural machinery and equipment which can enhance economic security for farmers. Meanwhile, it is necessary to develop knowledge for farmers and establish an agricultural model for high-quality crop yields.

3. Waste Management: Due to the COVID-19 situation, the amount of waste has increased while a very small proportion is recycled afterwards. Therefore, **waste separation and waste management should become a national agenda** in order to promote correct waste separation and recycling to add value to waste. Lawmakers should amend or introduce laws to ensure strict waste management through the Waste Management System Roadmap that will set tangible goals and milestones. The public sector, the private sector, and the civil society should join forces to promote the development of basic infrastructure for waste sorting and management and **issue measures to support recycled products** such as procuring eco-friendly products, creating a recycled product badge, and setting a higher proportion for recycled materials for plastic products and packaging. Tax incentives should also be offered to owners of businesses related to waste and recycling.

4. **Circular Economy in the Construction Industry:** The construction industry uses a huge amount of resources with almost all the resources being made from virgin materials. Meanwhile, the industry has rarely considered that resources will be scarce in the future, thus, a large amount of leftover materials are discarded from construction projects and are not reused. The industry also fails to save energy and does not make use of renewable energy. Therefore, the construction industry and the government sector should join forces **to work towards establishing 'Green and Clean Construction'**. The government sector could be a role model of the industry by adapting Circular Economy to develop the government's basic infrastructure construction projects that will allow better management in the construction industry such as introducing eco-friendly materials that can be reused, promoting construction designs that focus on energy-saving structures and renewable energy, using technology to decrease leftover waste from construction, and promoting a system to manage leftover waste from construction.

Water Management with Water Reuse Systems

Current Situation

In 2021, Thailand will face severe drought due to changing climate patterns and less rainfall. However, it is evident that Thailand will be able to store only 7-8% of water resources which is insufficient for water use nationwide which is as much as 120,000- 150,000 million cubic meters. Meanwhile, reservoirs across the country have a combined capacity of 80,000 billion cubic meters but are able to store only 40,000 million cubic meters while next year, the amount will drop to only 20,000 million cubic meters. Out of the 154 million rai of agricultural land, on 10 million rai have sufficient water for agricultural activities while the rest will lack water. This is a recurring issue and each year the government spends 6 billion baht to provide aid for those affected by droughts and floods. To sustainably survive droughts, communities must implement a water reuse system. If the budget for aid is allocated to support communities to develop water reuse management, the drought problem would be sustainably solved.

A water reuse management requires water management and landscape arrangement that will allow water to be reused over and over again. In the past, the private sector has collaborated to promote communities to learn how to manage water by themselves, resulting in prototype communities that were able to solve their issues, increase crop yields, establish economic security and a sustainable income so that they become self-reliant and equipped to survive the drought.

Prototype communities that have efficiently carried out the water reuse management:

Dong Khilek Community, Prachinburi Province

This community is the home of the country's largest flower orchards. The sub district was able to save over 480 million baht in funds for the construction of 2,000 underground dams to store water for agriculture. They also dug shallow ponds and used energy from solar cells to pump water for reuse in households.

Ban Sala Din Community, Nakhon Pathom Province

This community is recognized for its ecotourism activities and lotus ponds. However, locals faced problems from floods, droughts, brackish water, to wastewater. Thus, they solve the problems by drawing a water map, cleaning canals, and constructing pipes underneath the roads to connect canals together. Moreover, locals installed grease traps in households and reused water for the rice fields which enabled them to grow rice three times per year without having to replant seeds.

Phu Thum Phu Kratae Forest Community, Khon Kaen Province

The community faced over 40 years of droughts as the soil could not retain water. Now, the community has stored enough water for four years' use even during low rainfall by drawing a water map that shows the area's elevation, distributing water from high areas to low-lying areas, and reusing water from original water sources.

Ban Sa Phae Nua Community, Lampang Province

The community transformed themselves from being deep in debt into a community that has sufficient water for agriculture year-round by constructing concrete ponds and distributing the water into agricultural land while

constructing water storage areas and dams. Moreover, their water reuse allows them to grow several cycles of crops, generating 11 million baht in a three-month period.

Proposed Solutions

Joining forces to solve the drought crisis using the “water reuse management” by

1. Supporting Thai people to rely on themselves by learning how to do landscape arrangement and apply technology that enables a “water reuse management” to cater to the needs of each community while storing the maximum amount of water possible by cleaning water sources that have dried up such as the project to Trade Soil for Water. Communities should also be encouraged to learn about agriculture to boost their crop yields and develop local wholesale markets for farmers and locals who have returned to their hometowns due to the economic effect from the COVID-19 crisis.

2. While the private sector has collaborated to support a number of communities to succeed in generating stable and sustainable income, it may not be in time for the impending water crisis that will affect a large number of people. Therefore, SCG is proposing the government to play a key role for the expansion of the “water reuse management” project nationwide which will alleviate water shortages, revive local economies, and boost the yields of Thai agricultural products so that the nation can serve as the world’s kitchen.



Water reuse system in the rice field which allows water to be reused again and again.



Water reuse system.



Household water reuse system.



Water reuse system on a highland with rolling terrain.

Agri-Circular Economy

Current Situation

A severe drought crisis has affected about 150 million rais of agricultural land. Of the total, only 30 million rais is in irrigation zone and can reap benefits of water supply, unlike farmers of 120 million rais in non-irrigation areas who admittedly have to face water scarcity and reduced income due to weak productivity. Adding to the challenges confronting farmers, the PM 2.5 dust pollution induced by the open burning of agricultural residues like rice straws, sugarcane leaves, corn cobs, has remained an ongoing constraint.

Over the past years, business sectors have gained a better understanding of the Agri-Circular Economy principles and introduced zero-burning practice to maximize resource utilization. An ample range of strategies is put in to increase farming productivity and meaningful agricultural waste management from residue reprocessing and regenerating approaches that help generate annual revenue of 25,000 million in the agriculture sector, agricultural water management, appropriate technology, to the cost-effective farming system to ensure maximum value with New Theory Solution and adoption of innovations and technologies.

Proposed Solutions

Establish **inclusive collaborations** to drive **sustainable growth in agriculture** by focusing on reducing PM 2.5 with a shift in approach from burning to value-added processing and promoting technological development to increase productivity.

1. Achieve **100% zero-burning agriculture** by 2022 to mitigate PM 2.5 dust pollution and global warming and generate extra income by transforming agricultural residues, such as rice straws, sugarcane leaves, and corn cobs, to bio-mass, animal feed, and packaging. This practice brings in a supplemental income of 25,000 million baht per year in the agriculture sector. Education is key to inspire related stakeholders in the government, businesses, and farmers to embody such practice.

2. Promote the adoption of “**Innovative Technologies for Higher Productivity.**” Farmers can escape the burden of investing in innovation by establishing a community fund or co-op fund, a sustainable system to provide farmers with access to agricultural machinery and innovations. The approach is also a means to increase productivity and promote platform utilization for better access to technology innovation, farming tools, and equipment. Solutions under this approach include cost-reduction farm management, Zero Broadcast solutions which help cut costs and wastage of seeds by 50-60%, Precision Farming Solutions which help reduce cost and wastage of fertilizers, Laser Levelling Solutions which minimize water utilization cost in farming and minimize damage from floods which can result in a loss in productivity. All these measures are intended to reduce costs and create more income for farmers.

3. Support **Farmers and Agriculture Model** to improve farmers’ skills and education to help them find appropriate cultivation patterns that ensure high yields. The solutions including boosting farmer’s knowledge

based on their farming contexts and establishing agricultural learning centers to foster the use of technology and innovations in line with the circular economy

4. Establish the government-initiated big data center to provide farmers with learning sources and streamlined access to information.



Zero-burning agriculture where agricultural by-products are converted into fuels.



Innovative technologies to improve farming productivity.

Waste Management

Current Situation

Waste has been a chronic problem for Thai people, and it has been exacerbating, especially after the advent of the COVID-19 pandemic, resulting in a sharp increase in trash volumes, especially packaging waste.

However, several best practices of waste management are employed in many sectors from communities, markets, temples, universities to the household level. Such approaches are now being implemented at a broader scale. Examples include Community Like Waste (Zero-Waste Community) at Ban Rang Plub community in Ban Pong district, Chak Daeng Temple with Recyclable and Solid Waste Management where a temple serves as a center of integrated waste management and venue for repurposing recyclable plastic waste, Simummuang Market with cost-reduction and revenue-generation-driven waste management practices, SMART (AP Thai) with waste management practice in residential projects and green campaigns with tenants with the help of digital system for data collection, urban city's waste management model Chula Zero Waste, the launch of "Vibhavadi Zero Waste" and "Send Plastic Home" initiatives by Thailand Responsible Business Network (TRBN), and Public-Private Partnership initiatives driven by PPP Plastics to achieve sustainable plastic and waste management.

Proposed Solutions

Make waste sorting and waste management a national agenda, and accelerate relevant legal amendments and establish additional provisions to improve **law enforcement on plastic waste management**. The proposed solutions are as follows:

1. Accelerate the implementation of **Waste Management System Roadmap** to set a clear framework and actionable functions as well as counting in all stakeholders from the government, businesses and civil groups in a joint effort.

2. The government must launch **measures to support recycled products** in a concrete manner, e.g., green public procurement, eco-labeling, increasing the proportion of recycled materials in products and plastic packaging, and facilitating cooperation between manufacturers and recyclers.

3. The government must **offer preferential tax privileges to businesses related to waste recycling activities** to advance recyclers' manufacturing processes in line with environmental regulations and motivate them to enter the tax system.

4. The government must enhance waste collection and waste management infrastructure. Among measures are recognizing sa-leng as a legal profession, promoting the adoption of a **digital system or digital application** to connect waste sources and junk shops, and encouraging corporates to **establish drop-off points for used products or plastic packaging** in several settings such as malls, supermarkets, convenience stores to improve recyclers' waste handling performance.

5. Encourage waste management at source mindset and create a public value of waste reduction, proper waste separation, appropriate practices for sorting out organic materials from recyclables such as plastic items, paper, aluminum cans, and glasses as well as promoting the use of recycled or semi-recycled products to encourage circularity.



Appropriate waste separation at source.



Plant pots made from recycled peritoneal dialysis solution containing gallons.



Plastic chairs made from school's milk packagings.



Recycled plastic road.

Circular Economy in Construction Industry

Current Situation

Most players in Thailand's construction industry have operated using a linear economy, meaning that natural resources are utilized to manufacture products in which 15-20% of construction resources ended up as valueless assets. Energy-saving measures and renewable energy sources are not widely used, resulting in an enhanced direct impact on global warming and put the planet at risk of resource scarcity.

Construction companies have come together and formed a group called CECI (Circular Economy in Construction Industry), intending to collectively incorporate the circular economy in the construction industry into end-to-end operations. Members will work together to develop innovations and technologies that ensure resource maximization with the core focus on resource-friendly design, energy-saving, renewable energy, waste reduction, and waste material repurposing in line with the sustainable design concept. The goal is to create a standard and effective construction management protocol.

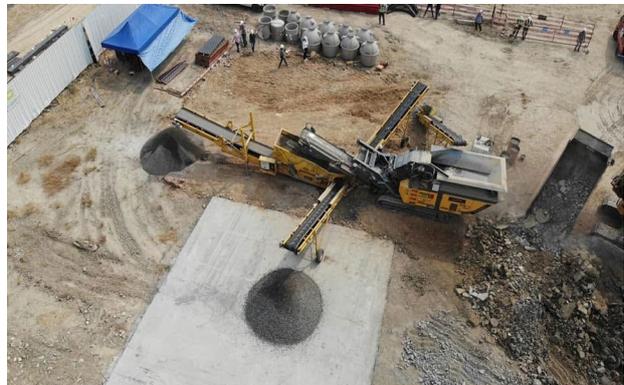
Proposed Solutions

The construction industry and the government have to join forces and **transform the industry into Green and Clean Construction** by implementing solutions as follows:

1. The government must take the lead in **implementing the Circular Economy in the state construction projects** and develop infrastructure systems to back such practices such as using environmentally-friendly and recyclable materials or adopting energy-efficiency design.
2. Promote the **establishment of infrastructure systems for construction waste management** such as waste collection systems, waste treatment systems where construction leftovers can be further utilized as recycled materials.
3. Offer **preferential tax privileges** as a way for businesses to develop construction projects that are in line with the government's policy.



Implementation of construction design software system to ensure maximum efficiency.



The use of mobile crusher to process and recycle demolition waste.