Moving towards a Circular Economy: More than Just 3Rs!

Moving towards a Circular Economy: More than Just 3Rs!

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The 3Rs, "Reduce, Reuse and Recycle" is a well-known concept in resource efficiency, that helps us "return" materials and resources to the lifecycle of a product, ensuring that we use less energy and produce less waste/pollution and emissions.
But is just "reduce, reuse and recycle" enough? Do we need a larger and deeper outlook at the global environment, and the impact that urban areas are having on it? Many countries are now looking to convert their economies to become more "circular" - an approach that takes its inspiration from the 3R concept.

A quick review of literature shows a number of "R"s - beyond reduce, reuse and recycle - that we need to look out for, listed below in alphabetical order. Many are, of course, interrelated and address similar approaches to environmental management.

Note that the word "resource" is used in a very broad sense and can include both living and non-living, natural and man-made resources within the context an urban living environment. It can be a practice, an attitude, or a convention. In explaining the different Rs, lifestyle issues, consumption patterns, green consumerism, and community participation initiatives were taken into account.

R

REACTIVATE: To bring back an older technology or technique/skill that is simple to use or is easily repaired.

R

REBUILD: With reference to a system or technology, rebuild refers to its development so that it is made more efficient to use less energy or produce less waste.

R

RECLAIM: Improve, get back and/or make operationable once again, wasted or degraded resources - for example, in the case of degraded or unusable land or derelict buildings.

R

RECONDITION: An example of recycling - to disassemble and clean products recovered in factories and reassemble them after changing some parts. Quality assurance is processed as required and reconditioned products and units are shipped to the market as the same products and units as those recovered.

R

RECONSIDER: Used in relation to sustainable living: *reconsider* the need for a wasteful living lifestyle, the overuse of resources and redundant materials -- in order to have a minimum impact on the environment.

R

RECONSTRUCT: To build or formulate again, especially after it has been damaged or destroyed. To "build back better" after an earthquake.

R

RECOVER: Salvage or recoup the usefulness of a resource. Also bring a resource back to its original or improved functioning state.

R

REDESIGN: To revise in appearance, function, or content, especially redesign to make products/services to be environmentally friendly and socially cohesive. Design for Environment (DfE) and Design for Disassembly are popular business approaches to green the economy.

R

REFORM: Improve on a resource -- remove and rectify its misapplication or misuse. Change attitudes and practices in its use, so as to preserve and protect the resource.

R

REFURBISH: Especially used with respect to buildings, it refers to improving, equipping, or retrofitting a building to make it more resilient to disaster risks, or to its maintenance more environmentally friendly.

R

REFUSE: Used in the sense to reject or not accept a lifestyle that is wasteful, over consumes, and destroys the environment. Can also be 'refuse to create refuse'!

R

REGENERATE: Invest in a resource to improve, revive and rejuvenate it. Regenerate a resource to make it useful once again.

R

REGULATE: Control and restrict resource use with prescribed rules and norms -- particularly in the case of non-renewable resources. It can also include the management and monitoring of such resources to prevent misuse and degradation.

R

REHABILITATE: To restore a production system to a normal or good status by training and education, particularly in making the system environmentally friendly (use less energy, produce less waste/pollution/emissions).

R

RELINQUISH/RENOUNCE: Relinquishing or renouncing refers to giving up the use of certain goods or services that produce a negative environmental impact. Sometimes it may also mean the giving up of a personal 'convenience' for the good of the environment.

R

REINVIGORATE: To give new energy or strength to a local economy, for example, to be more environmentally friendly or closed-loop/circular. It may be done through infusion of subsidies, tax-cuts, laws and regulations, education and training and new technologies.

R

REINVENT: Change (something) so much so as to make it entirely new, particularly in terms of making the product or service more sustainable in the long run - environmentally sound, socially resilient and economically equitable.

R

RELOCATE: To move to a new location, particularly one that is safe and resistant to disasters such as earthquakes or typhoons; to avoid and prevent accidents and secondary environmental disasters.

R

REMANUFACTURING: Remanufacturing calls for the disassembly of products and removal of a large number of parts that can be used as parts in other new products.

R

REMODEL: Change the structure or form of a product or a building to ensure that it can be reused or its parts recycled. Or making a product or service be more environmentally sound.

R

RENOVATE: Especially used with respect to buildings, it refers to restoring a building to a good condition in order to make it more resilient to disaster risks, or to its maintenance more environmentally friendly.

R

REPAIR: Quite simply, machines and technologies that are in a bad condition or in a state of deterioration (uses more resources and emits) more waste that normal) need to be repaired to make it more efficient with less environmental impacts.

R

REPLACE: In some cases, resource crunching, wasteful goods and technologies have to be replaced by more appropriate and productive alternatives, that are less energy intensive too.

R

REPURPOSE: Repurpose is to redo a tool, a technology or a product for another use/form, sometimes completely different from the original intended purpose. Repurposing is, in many cases, done on items that are to be thrown out as garbage. \

R

RESOLVE: Resolve refers to taking a decision, making a resolution, to change our ways and lifestyles, so as to have a small 'footprint' on the earth -- resolve to consume less resources.

R

RESPECT: Maintain a healthy and humble respect for the environment. Understand its fragility and vulnerability to indiscriminate use and abuse. Also respect and understand nature's 'backlash' in such cases!

R

RESTABILIZE: This refers to improving a negative situation or handling a problem by making the solution more strong or safe by using, for example, new technologies, new skills or new techniques.

R

RESTORE: Reinstall and return to the environment the resources that were taken from it. Restoring also refers to the return of resources to its natural state.

R

RESTRICT: Curtail and control the indiscriminate and wasteful use of natural resources. It can also mean the confinement of resources use within levels below which it can be regenerated and regulated.

R

RESTRUCTURE: Fundamentally organize differently, for example, a product's design or its production process, in order to reduce waste generated at various stages of its manufacture; to use less energy or produce less pollution/emissions.

R

RETHINK: A rethink towards sustainability is to consider or assess social, economic and environmental courses of action again, especially to undertake a change in goals.

R

RETOOL: Used in a factory setting, retool is changing machines and manufacturing systems to make them more efficient in resource and energy use, or produce less waste, emit less emissions, or pollute less.

R **RETROFIT:** In reference to buildings or factories, it refers to addition of parts or equipment in order to make it more efficient, less polluting or resilient.

R **RETURN:** Returns, refunds or exchanges refers to a policy for manufacturers or companies to accept their products - this may include (a) the product itself, which can then be recycled, or (b) the packaging that wrapped the product. In some countries, a "return policy" may include taking back an older product when a new version is purchased.

R **REVAMP:** To change or arrange a manufacturing system or other instance in order to improve it so as to be more environmentally friendly

R **REVISE:** Examine and make corrections or alterations to a product or its production system in order to make it more sustainable and environmentally sound.

R **REVITALIZE:** With respect to buildings or factory, it refers to giving new life, energy, activity, or success in order to make it more sustainable or friendly to the environment

R **REWARD:** Highlight good practices in sustainable resources use; create incentives and prizes for good behaviour. In a negative sense, penalize and fine inappropriate and wasteful lifestyles. (an example of a "reward" is an *eco-label*, which is awarded to environmentally friendly products and can be used by manufacturers to expand to new markets)

Bringing all the above Rs together will help us move towards a Circular economy, as illustrated in Figure 1.

A **circular economy** is based on the principles of ensuring that production and consumption systems contribute to sustainable development, including minimizing waste and pollution, reusing and recycling products and materials, regenerating natural systems, and other issues related to a sustainable lifestyle.

Circular economies employ any of the "R"s listed here to create a closed-loop system, minimizing the use of resource inputs and the creation of waste, pollution and carbon emissions. A circular economy aims to keep products, equipment and infrastructure in use for longer, thus improving the productivity of these resources.

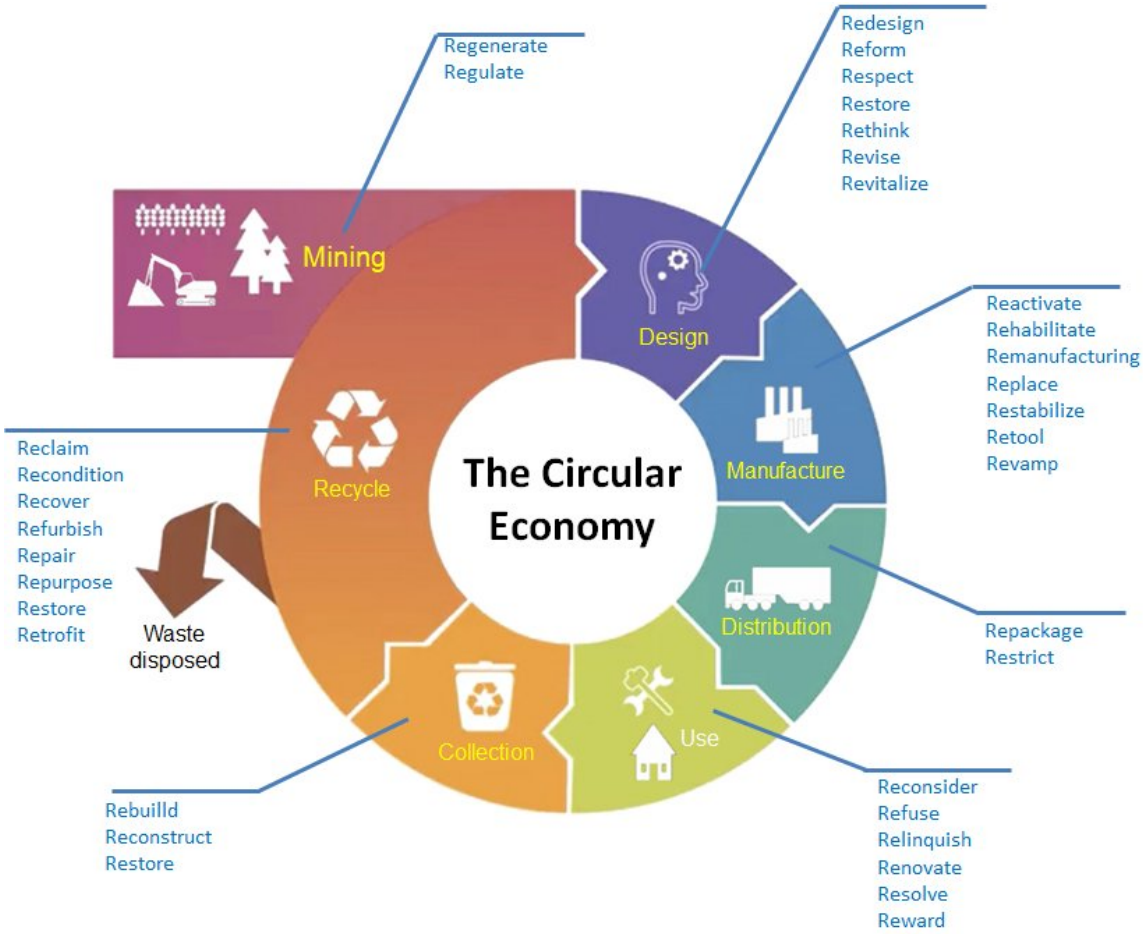

Figure 1: The Rs of a Circular Economy

The closed loop system of a circular economy looks at the life-cycle of a product or service - from mining of natural resources, to the design of products, manufacture, distribution, use, collection and recycling or final disposal - in order to form what is now popularly being advocated as a circular economy.

The collection of Rs, more than just the original 3Rs - reduce, reuse, and recycle - illustrate the complex actions and stakeholders, of thinking itself, that is needed to transform an economy to become circular.

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Return to Infopac on 3Rs
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