CIRCULAR ECONOMY

Time for a facelift

Peter Godfrey FEI, Energy Institute Managing Director, Asia-Pacific, takes a closer look at energy and the circular economy.

Despite the fact that energy has been key to the development of human society, its increasing use, driven almost entirely by technological progress, has brought with it a number of serious problems. Now is the time to tackle these issues as the energy sector transitions to a low carbon future.

As Ángel Gurría, Secretary General of the OECD, stated last year: 'Moving towards a more responsible and efficient use of natural resources is key to sustaining our future. Not only to address resource scarcity, wastage and associated environmental effects, but also for incentivising innovation and modernisation towards a circular economy.'

In the coming decades, growing populations with higher incomes will drive a strong increase in global demand for energy, goods and services. Global gross domestic product (GDP) is projected to almost quadruple in the next 50 years, according to the central baseline scenario produced by the OECD.

By 2060, global average per capita income is forecast to reach the current OECD level of around $40,000/y. But at the same time, production and consumption are shifting eastwards towards emerging and developing economies, which on average currently have significantly higher annual growth in resource and materials' intensity (a measure of resources such as energy, water and other materials required for the provision of a unit of a good or service).

However, as domestic wealth increases, developing countries should see a fall in resource and materials use as their economies slowly shift their dependence away from agriculture and resource-intensive industrial production. Technological developments will also help to decouple growth in production levels from material inputs to production.

But the bottom line remains the same. Although global resource and material use is projected to decline more rapidly than in recent years, while recycling is expected to become more competitive, thereby reducing the consumption of primary materials, it is not enough. Increased global wealth will still lead to a strong increase in demand for both primary and secondary materials, together with their environmental consequences, unless we all take positive action to reduce resource intensity now.

Changing the rulebook

The good news is that there are solutions at hand to transition into a new era of greater resource efficiency. But in order to do this, we need to change the rules that currently dominate our industry sectors – especially energy and mineral resources.

Right now, most energy and mineral resource companies make money by selling, not saving, their product. Carbon-intensive fuel producers and other emitters are not held fully to account for the environmental and social consequences they create.

Whilst climate change has created an immediate focus on decarbonisation as a potential mitigant, it is resource efficiency – or rather '*inefficiency*' – that lies at the heart of our sustainable energy problem. Resource efficiency essentially means doing more with less, creating more value using fewer natural resources.

The indisputable problem the energy industry faces today is that, despite a continuing need for hydrocarbons to play a significant part in the energy mix for some time to come, less than 20% of the hydrocarbon molecules extracted from the earth – be they in the form of coal, oil or gas – is actually turned into useful end-use energy. The overall business models are fundamentally structured around being rewarded by the volume of hydrocarbon molecules consumed as opposed to optimising their efficient use.

Given advances in technology, consumers are rightfully questioning whether we should continue to pay for these supply chain inefficiencies. Or should we be shifting towards a newer model that takes greater account of the efficiencies and technological advances that can be built into our energy systems, both now and in the future, together with their environmental and social effects?

Energy policy

Even though resource efficiency investments have the potential to yield economic and environmental benefits, governments have been slow to develop policies that encourage such action. Global resource efficiency has increased by a mere 1%/y over the past three decades. This is insufficient to counterbalance ever-increasing demand for energy and resources.

Even declared champions of the resource efficiency agenda, including the European Union (EU), have yet to deliver on their ambitious goals. However, the European Commission's recently announced seven strategic building blocks to achieve net zero carbon emissions by 2050 go some way to setting a road-map:

1. Implementing stronger incentives and penalties based on energy efficiency measures.
2. Application of further incentives for large-scale deployment of renewables, leading to wider electrification and a high degree of decentralisation.
3. Implementing further cuts in emissions from transport, which is responsible for around a quarter of greenhouse gas emissions in the EU.
4. Increased focus on creating productive and competitive EU industries within the context of the circular economy.
5. Further incentives to drive development of smart network infrastructure and inter-connections.
6. Reaping the full benefits of the bio-economy and creating essential carbon sinks.
7. Investment in further research on carbon capture and storage (CCS), especially in energy intensive industries, together with the greater use of hydrogen.

Overall, despite high-level attempts to mainstream the resource efficiency agenda, most national policy measures still lack a coherent, systematic approach and large-scale implementation.

If government and industry are to address the reputational challenges that the oil and gas sector faces, they need to find ways to address these issues head on – and quickly.

Need for change

This year's IP Week was firmly underpinned by two overarching but similar statements. Amin Nasser, Head of Saudi Aramco, stated that: 'The global oil industry faces a "crisis of perception" that is failing to convince many opinion formers that it has any place in a world threatened by climate change.' While Bob Dudley, BP's CEO, maintained: 'Policy elites are in denial over how hard it will be to decarbonise the world economy, and public opinion is looking for easy scapegoats... The oil industry faces a blizzard of hostile myths and is heading into stormy and uncharted waters as climate targets tighten.'

Both recognise the need for change and a concerted effort by the oil and gas sector to communicate an aligned message about its willingness to contribute towards a cleaner, greener future. However, in my opinion, neither have addressed the underlying issue that the energy sector faces today and has done little to address – resource efficiency.

Wherever we live in the world, few would disagree that we need to define new energy and resources policies that more comprehensively and transparently integrate resource efficiency, environmental, social and security concerns. However, increasing resource efficiency requires action by all stakeholders – governments, industry and individuals.

The circular economy

Resource efficiency is closely linked to the concept of the circular economy – the idea of moving away from a linear-based industrial economy to a circular-based economy, which is restorative and resource efficient by design.

All economic activity consumes finite resources (eg fossil fuels, minerals, water and timber) in a manner that impacts livelihoods and the environment at local, regional and global levels. The consumption of raw materials generates pollution, depletes the world's natural stock of resources and is a principal source of greenhouse gas (GHG) emissions. Targeting greater efficiencies in the way resources are used has the potential to significantly reduce a business enterprise's contribution to climate change and increase the sustainability of its core operations.

As noted, resource efficiency means reducing the quantity of inputs needed to produce a unit of output. Simply put, doing more with less. Not only does the reduced consumption of inputs (such as raw materials, energy and water) lead to reduced byproducts (including waste, wastewater, air pollution and GHG per unit of output), it also reduces demand on the supply of these inputs along with their environmental costs and social consequences.

The more efficient design of production and consumption systems are central to resource efficiency outcomes.

Focus of dialogue

Creating a circular economy promotes the transformation of final byproducts by re-purposing or recycling them. This should be the focus of dialogue between government and industry.

Regulations need to reflect that the real cost of, and competition for, access to finite resources are growing and should be priced into future business planning and strategy.

Organisations should be required to implement management systems aimed at defining procedures/mechanisms which:

- Identify opportunities to reduce energy, water and other raw materials' usage levels over time.
- Transparently record any initiatives that are enacted and track the resource efficiency savings that are realised.

Governments need to set ambitious resource efficiency targets matched by carefully designed policy packages to ensure continuous improvement of resource efficiencies.

Transparent frameworks must be designed to mitigate and/or remove the barriers to investment, and to incentivise investment in resource efficiency aimed at better balancing economic, environmental and social goals.

All stakeholders need to better understand and respect the transitional costs to get to the goals set and manage the trade-offs involved in fundamental restructuring of the supply chains to deliver the full potential of resource-efficient circular economies.

The oil, gas and energy sector is of fundamental importance to our survival and future development, but it is time for a facelift. Resource efficiency is as much the responsibility of the producers as well as those of the consumers.

When our industry can demonstrate and communicate the actions it is taking towards the circular economy, its 'crisis of perception' may slowly dissipate. ●