Vidya Vikas Education Trust's
Universal College of Engineering
Kaman - Bhiwandi Road, Vasai, Maharashtra
Accredited with 'B+' grade by NAAC, approved by AICTE, DTE
Recognised as Gujrati Linguistic Minority

CURRENT WAVES

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College Profile

Everything you need to know about us.

Embraced by lush greenery and scenic beauty, Universal College of Engineering is a treasured place for aspiring engineers to leave their imprints towards success.

As a college within the wider network frame, we are one of the fastest growing institutions in India. Our institute has been accredited by National Assessment and Accreditation Council (**NAAC**) with **B+ grade** in the first cycle of accreditation. Times of India Survey **Ranked No. 1** in India among Top Emerging Private Engineering Institutes for 6 consecutive years 2015, 2016, 2017, 2018, 2019 and 2020 and the saga of accolades still continues.

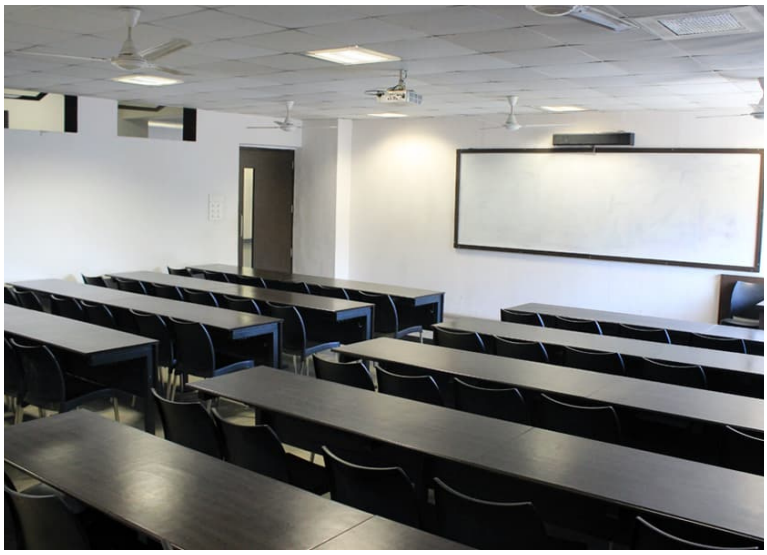
In response to the expectations of quality technical education, our college is approved by the All India Council for Technical Education (**AICTE**), New Delhi; recognized by the Directorate of Technical Education (**DTE**), Government of Maharashtra; affiliated to Mumbai University.

Our college is also associated with professional bodies like IEEE, IETE, ISA and CSI to update the revolutionary technological advancements.

ARTICLES INSIDE THIS ISSUE:

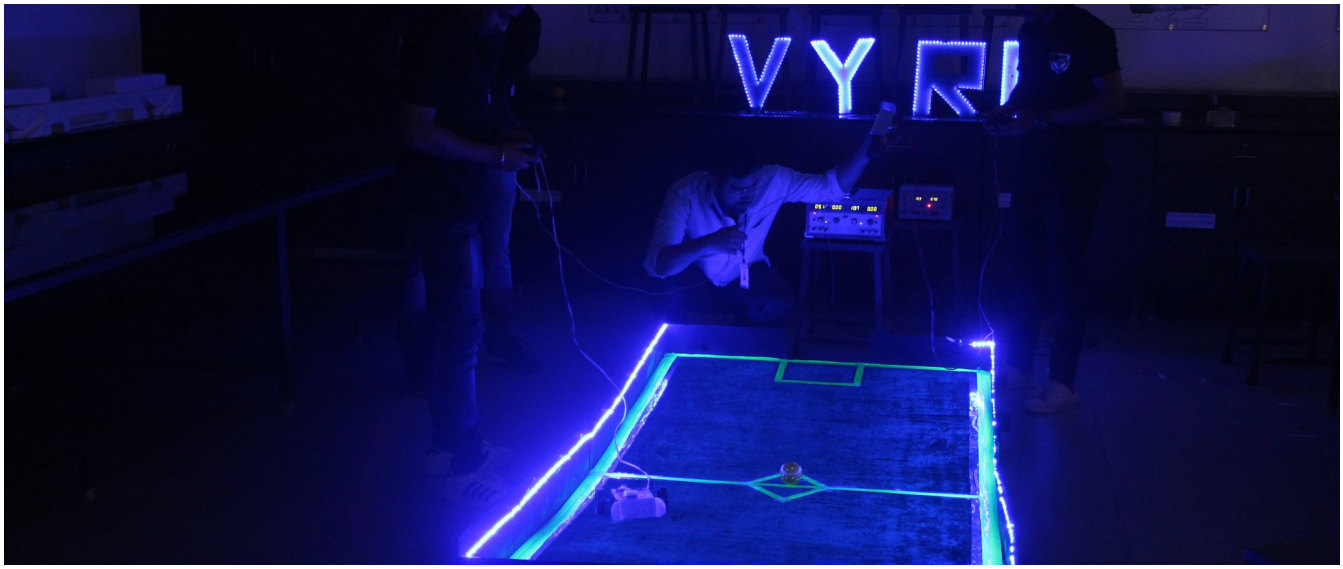
We offer 4 years full-time Bachelor of Technology in Computer Engineering, Civil Engineering, Artificial Intelligence & Machine Learning, Information Technology Engineering and Data Engineering.

The unique state-of-the-art facility of the institute has been carefully designed to accommodate the needs of the students. Laboratories are equipped with world-class facilities based on the latest technology of different sectors. Our smart classrooms are well ventilated, spacious and equipped with overhead and LCD projectors along with the public address system. College library provides a rich collection of specialist library resources and services to support students' academic work and enrich their research skills.



We are obliged to equip our students to get placed in highly reputed companies by mentoring their necessary skill set for cutting-edge technologies. The core highlighted areas are helping students with their technical competency, communication skills along with career guidance and counselling.

Universal College of Engineering has produced a large number of successful alumni who are working in reputed organisations in India and abroad and have contributed immensely to the cause of nation-building and society. We welcome all engineering aspirants to create an incredible legacy in the field of engineering.



What is a Global Minimum Tax Rate?

In thsi newsletter, *we talk about global minimum tax rates and why the US is seemingly pushing for it.*

Business

The Story

Multinational corporations don't like to pay their fair share of taxes. They'll do everything in their power to exploit loopholes and minimize their tax liability. Most companies simply open offices in places like Ireland and the Cayman Islands—destinations where tax rates are low or negligible. And at the end of it all, they'll have done just enough to avoid paying billions of dollars in taxes. [Check Double Irish Dutch Sandwich]

And the US government is sick of it.

They know this is a race to the bottom.

Because countries like Ireland and Luxembourg have been doing this for ages. They have been enticing major corporations by offering them deals they can't refuse—low corporate tax rates and a business-friendly environment. And as companies began setting up subsidiaries and shifting their corporate headquarters, the US lost a ton in tax revenue.
Even worse, they've been forced to reduce their own tax rates in a bid to be more competitive. And it's happening everywhere. In 1980, the average global corporate tax rate stood at about 40%. As of 2020, however, it's languishing at 24%. Give it a couple more decades, maybe the global tax rates will drop even further. It had to stop.

Especially when you consider the fact that the Biden administration is planning to spend $2 trillion in propping up the US economy. They'll need the money and taxation is probably the easiest way to mobilize resources. So the US government forwarded a very brave proposal a couple of months ago—A global minimum tax rate of 21%. They revised it to 15% recently, but the premise is still the same.

They will simply begin taxing all overseas income at this new rate and eliminate loopholes that allow companies to shift profits to tax havens. Meaning, if you're a US company trying to book your profits in Ireland (that boasts a lower tax rate of 12.5%), then the US will simply walk in and collect the extra 2.5% on your overseas income—Thereby making sure that you're paying at least 15% in taxes regardless of where your sales are made. This would definitely help boost the government's finances.

But note that this isn't called a US minimum tax rate. It's called a global minimum tax rate. Because the US wants a consensus and they want everybody to impose this rule.

Why? you ask.

Well, if it were just the US imposing such a rule, then companies originating out of Germany, France, the UK, and other countries would have a substantial edge. They'd be allowed to create subsidiaries and operate out of tax havens with no implications. This would put them at a distinct monetary advantage when competing with other MNCs from the US. However, if everybody was imposing the global minimum tax rate, then such an advantage wouldn't exist in the first place. And for countries that have already lost billions in tax revenue, a global minimum tax rate of 15% wouldn't seem like such a bad idea.

But they know it's the US pushing for this initiative. So they think they can get some extra leverage here. One thing that's bothering a lot of European countries (including India) is how digital companies operate in foreign jurisdictions—Think companies like Netflix and Facebook. These US companies can sell their services to people in India without ever paying a single penny in taxes simply because they don't have a presence here. And while we have tried to hit back by imposing a "digital tax" of sorts, there's no clarity on how to deal with this problem entirely. Of course, the US doesn't want to do anything with this because most new-age tech companies are based out of the US and they're actually gaining from this whole exercise. But it's a good time for other countries to use the global minimum corporate tax as a bargaining chip.

So yeah, the US is looking to radically transform global tax laws and now you know why.

How did solar get so cheap?

In this newsletter, we talk about how a power source that was once considered a vanity object suddenly came to dominate the energy mix

Business

The story

One of the most radical things propelling the rise of renewables right now is the proliferation of solar cells in the energy ecosystem. Only a few decades ago, solar energy was an insignificant component in the energy mix. Today, however, it's competing with fossil fuels on an almost even footing. This begs the question—What really changed for solar? And how did we get here?

Let's go back to the 1950s, at a time when the price of photovoltaic cells (solar cells) was extremely prohibitive. If you had to install a single solar panel—the kind you'd put on your roofs today, it would cost you a whopping ~$600,000, after adjusting for inflation. That is a ludicrous sum of money to pay for any kind of energy, let alone solar. So it was a practically useless alternative.

But then, things started changing. At first, progress was modest. But solar cells found their use—in calculators, watches, and space vehicles. Soon, companies were making large strides in improving cell efficiency. Every square inch could now capture and supply more energy.

They were making wafers thinner, optimizing the structure of cells, reducing the use of expensive ingredients like silver paste, and learning on the go. Governments too joined the bandwagon. They invested in research and development initiatives that made better materials, improved manufacturing processes, and made solar cells/modules more cost-competitive.

Bottom line—Small incremental changes across the board helped drive down costs.

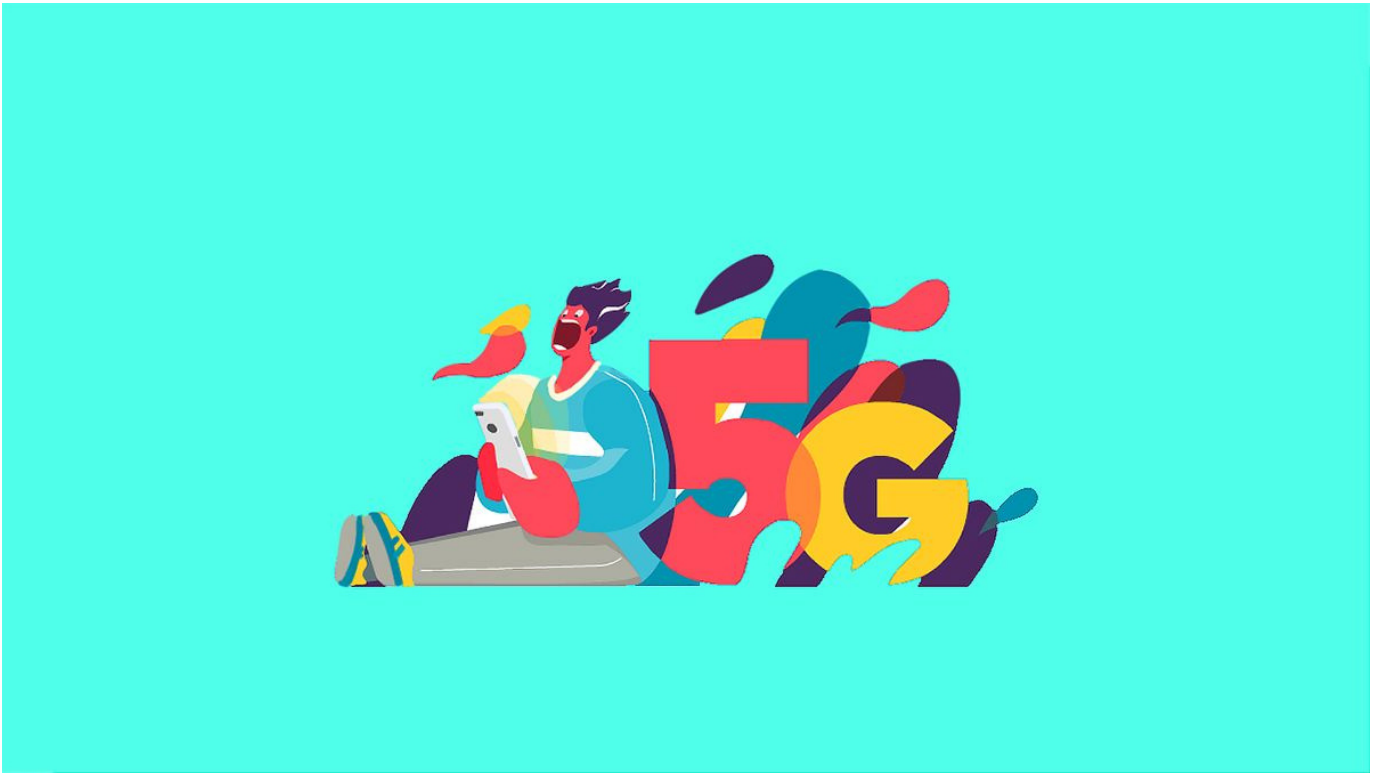
But there was something else happening in the background. Governments began incentivizing the use of solar over the past few decades. They offered grants and subsidies. They were bearing the cost alongside you and it changed the whole landscape. For starters, it made PV cells more affordable, and solar became a viable alternative for some people. But more importantly, as demand for solar cells started booming, it helped manufacturers leverage economies of scale. Think of it this way—Manufacturing solar cells is an extremely tedious affair. The amount of money you'd have to shell out to set up the factories—It's ridiculous. But once you get the ball rolling, the incremental cost of adding new capacity isn't all that high. So the more cells you produce, the better your chances of churning out a profit. And as you keep churning out more money, you can invest in expanding the capacity some more. This in turn breeds a virtuous cycle that keeps benefiting customers.

As companies try and battle it out in a free market, they get more ambitious. And as they learn how to set up massive factories, they'll also learn how to optimize the manufacturing process. They'll no longer produce as many faulty cells as they used to. They'll figure out how automation can reduce costs. They'll invest in R&D themselves and improve cell efficiency. All in all, they'll be responsible for making solar energy more viable, alongside the government. And sure, all this happened because governments in developed countries (and China) decided to subsidize solar power. But you've got to give the private sector some props as well.

Finally, there's one last thing—Fossil fuels. Remember, all costs are relative. If the price of solar energy drops, you better hope the price of non-renewable energy isn't tanking alongside it. Because then the cost advantage would simply evaporate. Luckily for us, that didn't happen. For instance, while solar energy became 90% cheaper, the price of electricity from coal declined by merely 2%. It's because dirty fuel was already cheap to begin. There wasn't enough scope to eke out inefficiencies. More importantly, governments made it a policy objective to treat non-renewable sources of energy with contempt. They deliberately made it more expensive to use these polluting variants and as a result, relative cost benefits fully accrued to the likes of solar.

Should we stop the 5G rollout?

In this newsletter, we talk about Juhi Chawla's lawsuit against 5G and the evidence surrounding the adverse health effects associated with cellular technology



Markets

The story

Conspiracy theories can originate in the unlikeliest of places. They can take shape organically and achieve some degree of acceptance inside small groups. However, when famous people lend their words to the cause and amplify the message, there's no stopping it.

Like for instance, singer Keri Hilson, who wrote this in a tweet (now-deleted) to her 4.2 million followers back in March 2020 —"People have been trying to warn us about 5G for YEARS. Petitions, organizations, studies…what we're going thru is the affects [sic] of radiation, 5G launched in CHINA. Nov 1, 2019. People dropped dead."

And while people were in fact dropping dead, it wasn't because of 5G. Instead, an invisible virus had made its mark on a rather oblivious population. This is a fundamental problem with all sorts of ideas that are forwarded, without due scientific consideration. It can mislead people into thinking there is a massive conspiracy at play and significantly impede progress on tackling the root cause.

And 5G has been no exception. People have propagated all kinds of new ideas on why 5G is detrimental to your cause. They've said it could induce headaches and migraines. They've proclaimed that the radiation could be harmful to humans and animals in large doses.

They've said there's a massive conspiracy to quell dissent despite the overwhelming evidence out there (which by the way doesn't exist).

And while we haven't had a chance to go through the lawsuit yet, it's safe to say that Juhi Chawla has gone ahead and pretty much made the same assertions afterwards. Her statement read "If the telecommunications industry's plans for 5G come to fruition, no person, no animal, no bird, no insect and no plant on Earth will be able to avoid exposure, 24 hours a day, 365 days a year, to levels of RF radiation that are 10x to 100x times greater than what exists today. These 5G plans threaten to provoke serious, irreversible effects on humans and permanent damage to all of the Earth's ecosystems."

Now bear in mind, there is no study that could potentially clear 5G from all the charges made against it. People understandably have concerns about how new technology could impact their life expectancy. However, it is important to note, that there is significant consensus within the scientific community on the matter and most experts would agree that they have found no conclusive evidence to back Juhi Chawla's opinions on RF radiation.

Even studies that do in fact show radio frequencies might potentially be damaging, are riddled with inconsistencies. For instance, consider this $25 million study conducted over two-and-a-half years. The study showed that male rats exposed to two types of RF (cell phone) radiations were more likely to develop a type of brain cancer called a glioma, including a rare, malignant form of tumor known as a schwannoma of the heart. But then, the analysis also showed that the exposed rats lived longer than the ones that weren't exposed to the RF radiation. So should we then conclude that mobile radiation makes rats live longer? Well, it's a slippery slope, and we need to be extremely cautious while making broad-based conclusions without considering the merits of the argument.
More importantly, we have not seen a higher incidence of brain tumors for the past 30 years despite the prevalence of mobile phones everywhere. And sure you could argue that 5G is very different from everything we've seen in the past. In fact, critics would point out that the supposed adverse health effects stem from 5G's unique architecture. With the previous generations, cell towers were kept miles apart and installed on tall buildings, away from people. However, 5G network will be powered by portable miniature base stations placed meters apart for better connectivity and faster speeds.

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