

## EDITORIAL

# Practicing Sustainability through ‘NET-ZERO’ R&D: A Decades-Long Urgency

Ashutosh Tiwari\*, 

Institute of Advanced Materials, IAAM, Gammalkilsvägen 18, Ulrika 590 53, Sweden

\*Corresponding author: E-mail: director@iaam.se; Tel.: (+46) 1313-2424

The Institute of Advanced Materials, IAAM embodies our dedication to pioneering materials for groundbreaking applications in health, energy, and the environment [1]. Over time, this institute has advocated the integration of translational research and innovation to bolster various sectors and industries. The IAAM, Ulrika campus promotes

climate-efficient R&D protocols and nurtures an organic worldwide innovation cluster (Fig. 1). Our activities are underpinned by an unwavering commitment to innovation and cutting-edge technology. As an institute, our ambition is to constantly redefine the frontiers to better serve critical areas integral to human well-being.



Fig. 1. The IAAM, Ulrika campus fosters a climate-efficient R&D practice and cultivates an organic global innovation network.

In the age of sustainability and the push for greener solutions, a climate-efficient Research and Development (R&D) process stands as a beacon of hope and a model for others to emulate. Such methodologies prioritize not only technological and scientific advancements but also ensure that these advancements tread lightly on our planet. They are designed to minimize carbon footprints, utilize renewable resources, and employ best practices that reduce waste and energy consumption.

Furthermore, cultivating an organic global innovation network takes this model to the next level. In the interconnected world we live in, collaboration across borders is no longer just an option but a necessity. An organic global innovation cluster implies a seamless flow of ideas, resources, and expertise between countries, industries, and cultures. This is not a top-down, orchestrated network but a naturally evolving one where

collaboration stems from mutual respect, shared goals, and a unified vision of a better future.

Such networks thrive on diversity, recognizing that the best solutions often come from the confluence of different perspectives. They facilitate the rapid exchange of knowledge, ensuring that innovations are shared, improved upon, and implemented quickly across various regions. This approach accelerates the pace of change and ensures that solutions are not confined to silos but benefit humanity as a whole.

In essence, a climate-efficient R&D method paired with an organic international innovation cluster network is a potent combination. It embodies the future of research, where the quest for knowledge and the drive for innovation are harmoniously balanced with the needs of our planet and its inhabitants. Such a model assures that as we advance technologically, we also progress sustainably, ensuring a brighter and greener future for generations to come.

IAAM serves as a central hub connecting researchers, students, professionals, organizations, and collaborative efforts spanning academia, industry, policymakers, governance, and the broader civil society. [2]. Our mission transcends the mere development of new tools and technologies; it's about enriching lives. We pride ourselves on our vast worldwide network of expert researchers, scientists, and technocrats. Our team, enriched by deep expertise, is adept at contributing to high-end research, and grant proposals, forming consortiums and alliances, facilitating educational programs, and spearheading translational R&D initiatives [1-3].

Working for better healthcare is always our top priority. We are thinking carefully about how to integrate advanced health research including AI, data science research, and new-age technologies to enhance the quality of life and solve global challenges [4]. The pandemic taught us to be together and to be ready for high-tech solutions to tackle the upcoming natural calamities. Our healthcare research facilities range from public health planning and management to device fabrication, feasibility studies, field trials, and many more [5-9]. Our research also focused on the clean energy approach for a greener future [10-14].

Over the past few years, in collaboration with the International Association of Advanced Materials members network, the institute welcomed talented researchers, fellows, students, and scholars who have the belief to leverage technological innovation in the sphere of cloud medicine, wearable devices, climate neutral technologies, waste utility, and net-zero R&Ds (Fig. 2). We have established consortia and initiatives that foster partnerships across academia, industry, and regional development, all of which have the potential to shape a sustainable future. These consortia bring out the best possible solutions for different problems of translational R&D by mapping out the path for new technologies, climate-neutral materials, and net-zero products. During the post-pandemic years, we look forward to offering several kinds of professional education, and industrial training programs and will create consortia for the net zero R&D clusters in the area of energy, water, healthcare, and green transition as well as partnerships for waste utility [15].



**Fig. 2.** IAAM opens its doors to brilliant researchers, fellows, students, and scholars to harness technological advancements in the areas of cloud medicine, wearable technology, climate-friendly solutions, waste management, and net-zero R&D initiatives.



Together with our global research networks, we are set to be more responsive and alert in today's transforming climate-neutral technologies. Working with sustainable development and net zero goals will be knitting partnerships and collaborations for our decade's priority [16]. It will allow us all to think deeper, achieve greater, and expand our perspectives. It will also improve the ability of our courageous and pioneering institution to be a stimulating partner to move across science, engineering, technology, medicine, and biotech for sharing and creating knowledge.

With "net zero" as the objective in both the "green" and "sustainability and circular" disciplines (Fig. 3), we will contribute towards the advancement of a sustainable and

circular society [17]. Our organization has a strong and long-lasting approach to advocating sustainability but moving with the current scenario, we must do more with our R&D world links, international networking, and practicing policies for a green circular future [18]. This is not a simple mission, but the possibility of achieving these objectives is much needed owing to the recent climate neutrality evolution.

As the director, I will be truly happy if we can become an institute that is truly inspiring to society by creating a sustainable and green culture. I would like to thank all of you for your constant support in pursuing these endeavours of "net-zero" targets.



**Fig. 3.** Targeting "net zero" in the green and sustainability arenas, the institute pursues a sustainable society vision. IAAM, deeply rooted in sustainability, recognizes the need for expanded R&D collaboration, international networking, and eco-friendly strategies. Realizing this goal is formidable, yet essential due to the shifting climate neutrality paradigm.

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