

Palm Oil Processing Special Interest Group Climate Change Action Plan

<p>Introduction Overall problem statement</p>	<p>The Palm Oil Processing Special Interest Group (POPSIG) notes IChemE's position on climate change.</p> <p>The action plan presented here follows on from this statement and forms part of IChemE's delivery against several of the commitments set out, namely to:</p> <ul style="list-style-type: none"> ■ develop detailed positions and action plans for economically sustainable and secure transitions to net zero carbon emissions in all areas of chemical engineering practice and regions where members are active; ■ it will also help underpin work on several other commitments, including provide policy advice to governments based on chemical engineering experience and expertise; ■ engage in public outreach activities with businesses and communities, to understand their concerns about the threats and uncertainties posed by climate change; ■ develop training courses and mandate continuing professional development (CPD), to provide the knowledge and skills to support members in the transition to a net zero carbon economy and in climate change adaptation; ■ encourage all regional members groups and special interest groups to hold webinars and seminars as part of the CPD programme; ■ to enhance skills and knowledge in pursuit of zero carbon futures and understanding of climate risks, and; ■ to engage with the wider membership.
<p>Specific problem statement</p>	<p>We consider the effects of the climate crisis and its impact on the palm oil supply chain. For instance, increased droughts and the risk of flooding will reduce oil palm yields (<i>Kamil and Omar, 2016</i>), affecting many smallholders' livelihood. In fact, researchers have predicted that the deteriorated climate change has posed an enormously detrimental effect on oil palm agronomy (<i>Paterson et al, 2017</i>). However, the palm oil industry actively conducts several activities to curb the impacts of climate change.</p> <p>The following are activities where the palm oil industry is contributing to:</p> <ul style="list-style-type: none"> ■ the industry generates a large amount of biomass within its supply chain. Although the industry has actively sought to utilise biomass for downstream applications, current applications such as leaving biomass in plantation areas for nutrient recycling; on-site use of biomass as solid fuels for steam boilers; or direct export of biomass as biofuel brings low value to the industry; ■ new high-value applications need to be promoted in the future to improve the sustainability of the sector; ■ we believe that Systems Thinking approaches would enormously benefit this area.

	<p>Most stakeholders in the industry have attained their sustainability certifications, however, there is still a small fraction that is yet to be certified. Therefore, there is a need to engage with relevant stakeholders to accelerate the total uptake of sustainability certification.</p> <p>The industry currently employs several sustainable practices. However, our SIG noted that the communication of such sustainable practices is still lacking. We believe our SIG can be a forum or platform for sharing experience, sustainable practices, and exchange of information between various stakeholders. Therefore, we believe that better promotion of sustainable practices in the palm oil industry is necessary, especially in sustainability, responsible production and consumption.</p> <p>Despite the activities and sustainable practices above, the palm oil industry has garnered a widescale misperception towards its sustainability. There is an ongoing debate on whether palm oil is sustainable (<i>Khatun et al., 2017</i>). Our goal, as a SIG, is to provide a balanced debate on matters related to palm oil and its supply chain.</p> <p>The Palm Oil Processing SIG has chemical engineers and researchers involved in various levels of the supply chain. Their efforts can be steered to promote new high-value practices, improving sustainability and certification in the palm oil industry.</p>
<p>What actions need to be taken to address the issue?</p>	<p>We will publicise the climate crisis and what we are already doing about it. Within the palm oil processing industry, our members will be actively promoting sustainable practices within the industry and to the public. We aim to provide a platform for industry players to showcase the current work implemented that helps improve the sustainability of the sector and new work/study by our academic research members that can enhance the sustainability of the palm oil processing sectors.</p> <p>We will publicise these work(s) through public access webinars, open access articles on our web pages, submissions to other publications, via social media and through IChemE's media centre.</p> <p>1.5 °C action plan</p> <p>As IChemE's Palm Oil Processing SIG, we would like to play an active role in developing industry relevant action plans and encourage our members to do the same. We are happy to provide inputs such as:</p> <p>Actions for a sustainable palm oil supply chain:</p> <ul style="list-style-type: none"> ■ engage with all stakeholders in our professional capacity for an inclusive palm oil industry; ■ provide an inclusive platform that informs the debate on the sustainability of palm oil with proven data and science; ■ disseminate proven data and science about the industry to various stakeholders such as universities, non-profit organisations, and international community; ■ develop new strategies to improve the overall sustainability of the supply chain by promoting and giving voice to circular economy practices in the industry, particularly in exploring potential high-value valorisation of oil palm biomass. These may include practitioners or researchers working on (but not limited to) total utilisation of palm-oil biomass for energy, biofuels, fertiliser etc; ■ develop tools, including evaluation of the sustainability of new projects in the supply chain to enable comparison between options at feasibility stage. <p>Actions on sustainability certification in the palm oil industry:</p> <ul style="list-style-type: none"> ■ engaging with relevant stakeholders such as certification working groups; ■ contributing articles to external media platforms and publications etc; ■ describing the efforts, on the ground, related to certification.

<p>What skills, training gaps or facilitation requirements need to be addressed?</p>	<p>We noticed that there is a gap in understanding the role of chemical engineers in the palm oil industry. Thus, knowledge and exposure to the industry are limited in curriculums across universities that offer chemical/process engineering.</p> <p>Apart from this, we realised that there is limited space for the palm oil industry players and academic researchers to share innovations, ideas, and discussions. The palm oil processing industry has evolved tremendously, especially in its downstream applications that help improve sustainability and contribute to climate change mitigation. It is now very common for palm oil industry players to convert their waste and biomass into useful value-added products. There are several success stories, which could, in fact, be shared with other players in the industry to promote and encourage more large-scale efforts in tackling climate actions. Currently, there is a lack of platform for the dissemination of information/ideas in the industry.</p> <p>We have experienced chemical engineers across different levels of the palm oil value chain that can contribute to the sharing of experiences, and knowledge with undergraduate students via talks and webinars. Our group has chemical engineers from both industry and academic backgrounds who can share their expertise, experience, and efforts via CPD courses, trainings etc. POPSIG can deliver such courses via webinar series and/or collaborate closely with the regional members groups.</p>
<p>What actions should the SIG and its members take to support delivery of the above actions?</p>	<p>Our group aims to support the delivery of the following actions:</p> <ul style="list-style-type: none"> ■ develop training materials to enhance understanding on zero carbon futures and understanding of climate risks for palm oil industry; ■ organise events that emphasise and relate to climate action efforts; ■ conduct webinar, roadshow activities, and virtual site tours to expose chemical engineering students to the opportunities of enhancing the palm oil industry. We will facilitate engagement between IChemE student chapters in universities and palm oil industry stakeholders for these activities; ■ provide a platform for sharing information/success stories in achieving improved sustainability in the palm oil industry; ■ engage with important stakeholders ie Malaysian Palm Oil Council, governmental agencies, ministries, industry, NGOs etc; to develop policy positions, public initiatives, and increased awareness of the efforts of the industry in tackling climate change issues; ■ engagement with other groups such as SIGs (ie Sustainability, Clean Energy, Education, Water) and regional members groups, especially on overlapping webinar topics.
<p>What actions will you encourage others to take?</p>	<p>There are several actions and activities which we believe can be taken, but which sit outside our group's domain. These actions and activities include:</p> <ul style="list-style-type: none"> ■ quicker accessibility of IChemE webinar recordings; ■ a common platform (ie TCE, IChemE website) that features the latest updates from each SIG to its members and the general public; ■ cross SIGs events, eg organising integrated forums or webinars that cover a broader scope of climate change efforts; ■ more support for researching new strategies to optimise the palm oil value chain based on climate action criteria, from external sources; ■ A fair debate and discussion on the topic of palm oil and its sustainability, from external sources.
<p>Next steps</p>	<p>In the next 12 months, we will be conducting activities such as:</p> <ul style="list-style-type: none"> ■ evening talks and webinars where POPSIG will invite speakers from the palm oil industry and academic research to discuss more topics related to sustainability, biomass/biogas utilisation and circular economy; ■ speakers will be invited to highlight how their work contributes to the climate action effort;

	<ul style="list-style-type: none"> ■ we will actively engage and collaborate with important stakeholders such as the Science and Environment Division of Malaysian Palm Oil Council (MPOC) and Malaysian Oil Scientists' & Technologists' Association (MOSTA). POPSIG will also invite the International Sustainability & Carbon Certification (ISCC) group to share the benefits of obtaining certification in the palm oil sector; ■ we also aim to invite palm oil companies that have previously obtained ISCC certification, to share their experiences; ■ virtual or on-site university roadshows and site tours will be planned to engage current undergraduate chemical engineering students across Malaysia. These events will highlight the role of chemical engineers in the palm oil industry. Future university roadshows will feature presentations on the "Role of Chemical Engineers in Palm Oil Industry" and "The Palm Oil Industry" with a higher focus on sustainability and climate action topics; ■ for the Design Project & Article Awards, in upcoming submissions, we will emphasise the criteria on how submissions contribute to climate action efforts; ■ we will offer recognition and support to projects that focus on climate change actions; ■ representatives from POPSIG will contribute to the working group involved in the Malaysian Sustainable Palm Oil (MSPO) certification. <p>By 2024 in line with the IChemE strategy, we will be conducting activities such as:</p> <ul style="list-style-type: none"> ■ offer CPD courses/workshops related to climate action. We aim to elect selected workshop leaders to offer CPD courses on zero carbon futures and understanding of climate risks for palm oil industry; ■ we aim to invite our members and committee to contribute sustainability related editorial pieces to our POPSIG newsletter; ■ we aim to start a new initiative to develop policy briefs on several topics related to matters on climate change. We will invite interested/experienced members to form a working group, to propose areas for policy advice, targeting two issues of Policy Briefs per year to provide key areas of advice to stakeholders in the palm oil industry. <p>Beyond 2024, we will look to develop a SIG led podcast to discuss topics related to climate action for the palm oil industry:</p> <ul style="list-style-type: none"> ■ we will invite panel members from industry, academia, and student chapters to discuss how they are striving for improving the sustainability of the industry. This will be a good opportunity to engage with the youth and future chemical engineers. Apart from this, we will continue to drive the initiatives mentioned above every year.
	<p>References</p> <p>Kamil, N.N. and Omar, S.F., 2016. <i>Climate variability and its impact on the palm oil industry</i>. Oil Palm Industry Economic Journal, 16(1), pp.18-30.</p> <p>Khatun, R., Reza, M.I.H., Moniruzzaman, M. and Yaakob, Z., 2017. <i>Sustainable oil palm industry: The possibilities</i>. Renewable and Sustainable Energy Reviews, 76, pp.608-619.</p> <p>Paterson, R.R.M., Kumar, L., Shabani, F., Lima, N., 2017. <i>World climate suitability projections to 2050 and 2100 for growing oil palm</i>. The Journal of Agricultural Science, 155(5), pp. 689-702.</p> <p><i>Note: Any opinions are those of the authors and do not necessarily represent those of IChemE.</i></p>