IEEE SA STANDARDS ASSOCIATION

Sustainable Infrastructures & Community Development Program

Industry Connections Activity Initiation Document (ICAID)

Version: 2.0, 29 August 2022

IC20-014-02 Approved by the CAG 12 October 2022

Instructions

- Instructions on how to fill out this form are shown in red. Please leave the instructions in the final document and simply add the requested information where indicated.
- Spell out each acronym the first time it is used. For example, "United Nations (UN)."
- Shaded Text indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE SA) Industry Connections Committee (ICCom) Administrator at the following address: industryconnections@ieee.org.
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Maike Luiken
Email Address: maike.luiken@ieee.org
Employer:
Affiliation: Western University / Carbovate Development Corp.

Name: John Verboncoeur
Email Address: john@msu.edu
Employer: MSU
Affiliation:

Name: Bruno Meyer
Email Address: bruno.meyer@ieee.org
Employer: ConsultBKM
Affiliation:

LEADERSHIP:, Maike Luiken (Chair), John Verboncoer, and Bruno Meyer (co-vice chairs)

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Individual Based

3. Purpose

3.1 Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

The drive towards a more sustainable infrastructure and electrotechnical and photonics-based industry continues to accelerate globally. Infrastructure in the context of this ICAID includes energy, communications, transportation, and other key industry verticals. The electrotechnical aspects of this initiative include the design, manufacture, and disposal aspects of the proliferation of electrical products in support of the aforementioned verticals, as well as consumer focused products. IEEE has numerous activities and volunteers addressing various aspects in support of sustainability transformation, however there is no dedicated IEEE community, and does not have the public visibility, nor a holistic program that provides thought leadership and highlights critical contributions to addressing these issues, despite the underlying expertise of our membership.

This Industry Connections program is intended to continue supporting the creation of a broad global and active community. It should also provide a formalized focal point for program activities, information and available expertise across the wide range of IEEE initiatives and standards associated with sustainable infrastructure and design, power sector transformation, and energy efficiency. In the mid or long run, it is envisioned that an IEEE council, community or other construct will be most organizationally advantageous, thus this activity is intended to serve as an incubator to develop the community, initiate a public presence, and develop roadmaps and action plans to deliver the IEEE-wide technical expertise in support of these transformative goals.

3.2 Related Work

Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

IEEE Sustainable Development Task Force (SDTF) – **original committee name – today: IEEE Joint Organizational Unit Sustainable Development Ad-Hoc (SDAH)** - this IC activity continues to be inspired by discussions within the IEEE SDAH on broader IEEE engagement in sustainability activities (education, global development, etc.). As a sub-topic of the larger sustainability vision, the IC activity

coordinates and participates with the SDAH (and this activity may take on operational aspects of SDAH concepts as needed).

Global Power Systems Transformation Consortium – IEEE (primarily PES,SA, and IAS) are engaged as a member of this global consortium that is engaged with acceleration of renewables, particularly in developing nations, and in collaboration with power system operators globally.

IEEE Sustainable ICT Initiative - Launched in early 2015 through the support of the IEEE Future Directions' new initiatives committee, the Sustainable ICT initiative's mission statement has been defined as to *build a holistic approach to sustainability through ICT by incorporating green metrics throughout IEEE technical domains*. The intitiative has submitted 9 PARs.

IEEE Ad Hoc Committee to Coordinate IEEE's Response to Climate Change (CCIRCC) – formed in 2022. This IEEE Board of Directors Ad-Hoc is chaired by the President-Elect Saifur Rahman. The committee's work is focused on developing opportunities to partner with external bodies and on coordinating the work of various IEEE Organizational Units (OUs) on Climate Change.

TAB Climate Change Program, Chair Wei-Jen Lee, - new in 2022.
Three focus areas:

- Task Force on Education Contents and Workforce Development
- Task Force on Wildfire
- Task Force on Managing the Food-Water-Energy Nexus for Sustainable Development

3.3 Previously Published Material

Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

There are numerous IEEE published papers, standards, presentations, etc. that are relevant to sustainable infrastructure, power sector transformation and related topics. These will be considered with some level of curation to support these activities deliverables and the establishment of IEEE leadership and public visibility

3.4 Potential Markets Served

Indicate the main beneficiaries of this work, and what the potential impact might be.

- Multiple corporate sectors looking for pragmatic technical and business-oriented solutions towards sustainability
- Power sector system operators and their suppliers
- National/regional government ministries and policy makers
- Energy and photonics-based sector regulators
- Electronic design and manufacturing stakeholders
- ICT sector stakeholders

3.5 How will the activity benefit the IEEE, society, or humanity?

Describe how this activity will benefit the IEEE, society, or humanity.

This program provides IEEE the opportunity to be recognized as a global thought leader in sustainability, and enhances the value and visibility of the technical work and contributions of the numerous IEEE member experts working in these fields. Through the open community building it will attract new members, in particular from younger generations. In parallel, it is envisioned that bringing these activities together in this comprehensive and cohesive program, new opportunities will be identified for conferences, publications and standards that provide targeted technical information addressing identified "global" needs.

4. Estimated Timeframe

Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

Expected Completion Date: 09/2024; this activity will be ongoing at IEEE, hence an ideal goal will be to

"graduate" the activity to a broader formal construct within the larger IEEE. If more time is necessary to make that transition, a renewal of this activity as a program of Industry Connections will serve as an alternate path.

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the responsible committee of the IEEE SA Board of Governors. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

5. Proposed Deliverables

Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

The following is a brief list of successful activities/deliverables during the first term of this IC include – to name a few:

The largest initiative: The Planet Positive 2030 Initiative that launched in February 2022, currently has over four hundred participants from more than over twenty countries and has created the first draft of a document called, *Strong Sustainability by Design* created to inspire Standards and other pragmatic tools to serve academic, engineering, professional and corporate audiences and readers.

- A workshop supporting Planet Positive 2030 took place at Stanford University in July of 2022, and further workshops are planned for The Hague in September 2022, Miami in April, 2023 and a TBD IEEE Conference in the summer/fall of 2023.

A proposal was developed by one sub-group that led to a first PAR being submitted: P7800 Recommended Practice for Addressing Sustainability, Environmental Stewardship and Climate Change Challenges in Professional Practice (sponsored by IEEE Society on Social Implications of Technology/Social Implications of Technology Standards Committee (SSIT/SC))
-Formation of additional sub-groups covering:

1) corporate sustainability best practices,
2) digital finance for sustainability,
3) sustainable agriculture (this work now taking place within TAB Climate Change Program)

- Multiple webinars and conference presentations about IEEE's sustainable development related activities to a suite of conferences, like Power Africa, GHTC2021, IHTC 2021, SusTech 2021, 2022; EPEC 2021, CCECE 2021, PESGM 2022 etc.

Focus Deliverables for Renewal: 2022 – 2024

Based on work done to date, this renewal proposes to focus the efforts of the activity on the following initiatives, while continuing to pursue additional specific opportunities relevant to the original scope of deliverables:

- Planet Positive 2030 Documents
  - *Strong Sustainability by Design* (final version planned for Q3, 2023) in production serving as a compendium that will also gain widespread feedback and awareness for IEEE SA / IEEE during a public RFI review process happening late 2022/early 2023. *Accountable Sustainability by Design* document being created with industry experts to provide distilled, pragmatic assessment tool for companies to immediately identify areas of sustainability to change, with solutions from SSbD document and IEEE experts on how to change
  - New standards proposals based on needs identified (e.g. hydrogen related topics, carbon credits)
  - Associated educational modules (workforce and general education)

- Sustainable Practices
  - Documents and standards proposals providing specific guidance on Sustainable Best Practices oriented towards engineers / academics.
- Corporate Sustainability practices and support
  - Survey to gather input on corporate practices and opportunities for IEEE to provide guidance, education, etc.
- Digital Technical Knowledge and Solutions Commons platform

Original Scope Description:

- Definition of the scope of the initiative and organization of the program with sub-tending focus (workstream) areas, and assignment of working group volunteer leads – sustainable infrastructure and energy is a very broad topic so determination of in-scope and out of scope needs to be defined via consensus upfront to avoid scope creep and dilution of progress. New areas can be discussed and entered over time. (Target completion December 2020) Candidate focus areas may include:
  - Large scale renewable integration
    - Building on IEEE participation in the Global Power Systems Transformation Consortium, IEEE focused initiatives will build upon and complement GPSTC goals and deliverables

- Circular economy and sustainable electronics design
  - The IEEE SA E-waste Opportunity Assessment identified the lack of reusable packaging standards as one of the obstacles to improving the environmental footprint of electronics packaging, while at the same time highlighting the benefits of 3D printing for the manufacture of electronics components to reduce waste, packaging, and the cost of disassembly. The IEEE Electronics Packaging Society will be invited to participate in the drafting and submission of one or more PARs focused on e-waste mitigation based on circular economy practices, including packaging standards and 3D printing to electronics standards.
- Transportation electrification (EV powering approaches)
  - Accelerating the growth of electrification across numerous industry sectors is seen as a key transformative aspect for sustainable infrastructure. Transportation is a major component, hence alignment with IEEE TEC initiatives will be a focus
- CO2 capture/sequestration
  - The transition from traditional to renewable energy requires time, thus enhance environmental efficiency during the transition is an opportunity in an area where IEEE has not been as visibly active relative to other related technologies
- Energy storage
  - Energy storage is key to managing variable energy resources; while renewable energy generation is often a more publicly visible aspect of transformation, a focus on storage is equally important
- Energy policy issues
  - IEEE has increasingly engaged with global governmental and policy bodies to inform and educate on the technology challenges and opportunities for sustainable issues; deliverables will seek to continue this aspect of providing the objective knowledge to support stakeholder decision making

- Curation of existing IEEE content aligning with the defined scope for inclusion in the establishment of the initial web presence – this action will serve as a starting point and help determine areas of gap and need, as well as evolving to an ongoing continuous improvement effort to maintain and update content (Target completion December 2020) – This work has transitioned to a collective effort for an ongoing database/spreadsheet maintained by the SDAH

- Development of an initial IEEE sustainable energy thought leadership-oriented report that may be used as a centerpiece for an IEEE marketing campaign to formally “launch” and promote the initiative and build awareness of IEEE expertise and available content

  - Recruitment and participation by a global base of volunteers, including non-traditional members (i.e. those that are not current IEEE members, but who are candidates as members based on their expertise in these areas)

- Each sub-tending focus area will recruit additional volunteers and establish their respective action plans by January 2023

- Initial proposal of opportunities and needs for new work (conferences, workshops, publications, standards, educational offerings) – completed for each focus area by January 20232nd Half 2023 – under the leadership of the executive committee of the overall program, focus groups will develop their deliverables, with coordination across focus groups by the executive committee to provide a holistic external facing representation of IEEE work on these topics

- 2H2023 – a transition plan will be developed to establish a longer term positioning of this initiative in the larger IEEE

5.1 Open Source Software Development

Indicate whether this IC Activity will develop or incorporate open source software in the deliverables. All contributions of open source software for use in Industry Connections activities shall be accompanied by an approved IEEE Contributor License Agreement (CLA) appropriate for the open source license under which the Work Product will be made available. CLAs, once accepted, are irrevocable. Industry Connections Activities shall comply with the IEEE SA open source policies and procedures and use the IEEE SA open source platform for development of open source software. Information on IEEE SA Open can be found at https://saopen.ieee.org/.

Will the activity develop or incorporate open source software (either normatively or informatively) in the deliverables? No, not envisioned at this time

6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government, or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICCom.

Specify funding requirements and sources, if any.

IEEE SA will provide the basic services provided for all Industry Connections programs. As the scope and visibility of this program is substantial and IEEE wide, SA will seek to assign additional staff to support the executive committee in the execution of this ambitious program. TA/MGA staff support will also be explored to supplement SA support and provide a cross-IEEE foundational structure in support of collective goals.

Funding of any direct costs associated with the deliverables will be explored with each participating IEEE OU to determine availability in support of specific project-based needs.

Additionally, support from IEEE SA marketing/digital teams will be requested to establish a web presence for the public facing aspects of the activity.

The Planet Positive 2030 workshops have relied on hosting support/funding from external organizations (e.g. Stanford). This activity will seek similar arrangements for future in-person meetings to cover costs. The resulting deliverable may also require enhanced publication and promotion support that will be requested of SA staff as it is expected to be a substantial sized report of recommendations from the activity.

7. Management and Procedures

7.1 Activity Oversight Committee

Indicate whether an IEEE Standards Committee or Standards Development Working Group has agreed to oversee this activity and its procedures.

Has an IEEE Standards Committee or Standards Development Working Group agreed to oversee this activity? No

This activity will closely align with the IEEE Sustainable Development Task Force – now the **IEEE Joint Organizational Unit Sustainable Development Ad-Hoc (SDAH)**, with many common members, and a focus on actionable tasks and deliverables inspired by SDAH recommendations. It was suggested in the original application that it is also conceivable to transition SDTF leadership and membership to this IC, depending on the longer-term plan for the SDTF (i.e., an alternative venue to pursue topics of interest should the SDTF be sunsetted at some point). Whereas a number of SDAH members are participants in this IC. It has been decided to continue the SDAH independently with regular reports on the IC to the SDAH – usually every 3 weeks.

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name: Committee Name
Chair's Name: Full Name
Chair's Email Address: who@where

Additional IEEE committee information, if any. Please indicate if you are including a letter of support from the IEEE Committee that will oversee this activity.

IEEE collects personal data on this form, which is made publicly available, to allow communication by materially interested parties and with Activity Oversight Committee and Activity officers who are responsible for IEEE work items.

7.2 Activity Management

If no Activity Oversight Committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc.).

Activity management will be provided by an executive committee, not to exceed 12-15 members. This will include a chair, vice-chair(s), focus group chairs and at-large committee members. Each focus group will have a chair.

7.3 Procedures

Indicate what documented procedures will be used to guide the operations of this activity; either (a) modified baseline *Industry Connections Activity Policies and Procedures* (entity, individual), (b) *Abridged Industry*

Connections Activity Policies and Procedures (entity, individual), (c) Standards Committee policies and procedures accepted by the IEEE SA Standards Board, or (d) Working Group policies and procedures accepted by the Working Group's Standards Committee. If option (a) is chosen, then ICCom review and approval of the P&P is required. If option (c) or (d) is chosen, then ICCom approval of the use of the P&P is required.

(a) This activity will use the policies and procedures provided in the Industry Connections modified baseline document.

8. Participants

8.1 Stakeholder Communities

Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity and will be invited to participate.

- Industry practitioners in sustainable development and renewable energy topics and other subject areas supporting technical solutions for sustainable development
- Academic experts in sustainability technologies and issues
- Policy experts in sustainability technologies and issues
- Energy, Communications and Transportation system operators
- Government bodies involved with sustainability and infrastructure modernization

8.2 Expected Number of Participants

Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

10-20 initially to launch the program, with potential to grow to over 750+ participants by the end of 2023. The initial leadership will include leaders from IEEE TA, MGA and SA to assure a cross-OU perspective. SDTF task force (now SDAH) and ad hoc members were invited to join as initial members to provide continuity and alignment with prior work of these groups. Recruitment of the larger community will build from this core group of participants. Invitation to new members of the SDAH to join the IC.

8.3 Initial Participants

Provide a few of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an individual-based activity:

Individual Name	Employer	Affiliation
Roger Fujii		IEEE TA
Maike Luiken		IEEE MGA
Bruno Meyer		IEEE TA/PES
Robert Fish		IEEE SA
Mei-Lin Fung		
Gora Dutta		

Sampath Veerarghavan		IEEE HAC
David Gonzalez		IEEE SusTech
Ed Perkins		IEEE SusTech
Debra Hagar		IEEE P7010.1
All SDTF/joint ad hoc members were invited to join upon approval and launch of the initiative… the invitation is open to SDAH members		

8.4 Activity Supporter/Partner

Indicate whether an IEEE committee (including IEEE Societies and Technical Councils), other than the Oversight Committee, has agreed to participate or support this activity. Support may include, but is not limited to, financial support, marketing support and other ways to help the Activity complete its deliverables.

Has an IEEE Committee, other than the Oversight Committee, agreed to support this activity? No

If yes, indicate the IEEE committee's name and its chair's contact information.

IEEE Committee Name: Committee Name
Chair's Name: Full Name
Chair's Email Address: who@where

Please indicate if you are including a letter of support from the IEEE Committee.