
The Norwegian Energy Collaboratorium in Singapore

November 2016

The Norwegian Energy Collaboratorium¹ in Singapore (NEC) is a company and institutions consortium operated by Innovation Norway (IN)² and the Research Council of Norway (RCN) in cooperation with Energy Research Institute at Nanyang Technological University (ERI@N).

Objective:

The objective of NEC is to support Norwegian companies and research institutions by connecting them to local partners, suppliers and investors in order to develop and expand their business in the rapidly growing Southeast Asia energy³ markets. NEC will also provide a gateway to Singaporean and Southeast Asian companies and institutions to identify and apply technology and investment from the Norwegian energy community.

Deliverables and value proposition:

NEC aim to establish a “knowledge partnership” between companies, universities and research institutions in Norway and Singapore engaged in order to develop technology and commercial solutions to sustainable energy challenges in Singapore and beyond in the Southeast Asian energy systems.

To that end NETC is established to:

1. NEC is a **collaboration and communication arena** for Norwegian companies and institutions with energy engagements in the region⁴. To this end, NEC will organize regular member meetings, technical workshops and active attendance in conferences.
 - o Montly members meetings – knowledge sharing and disucssion. The meetings will be hosted at relevant agencies or companies, and be a combination of thematic lectures by

¹ «Collaboratorium» is «a platform for collaborative innovation»..

² Technically and legally, NEC is a multi-client project in Innovation Norway Singapore’s portfolio.

³ NEC will primarily focus on new emerging opportunities with the energy markets; renewable energy, smart energy systems and markets. **LNG** is regarded as «greener energy» and is of hig hinterest for NEC members.

⁴ The «region» is defined as South-Asia, including India, excluding China. NEC is well connected to Innovation Norway’s offices in the region and will utilize these offices for services to NEC members.

the host, Q&A and discussion among members. See Action Plan later in this document for tentative timing and thematic focus.

- Biannual research workshops. These are coorganized by Energy Research Institute at NTU (ERI@N) and will focus on Norwegian-Singapore research cooperation with company participation.
 - NEC has ambitions to facilitate attendance for its members at two international conferences/expos in Singapore per year⁵. This includes organizing/coorganizing thematic seminars/workshops and organizing pavilion/booth for NEC members.
2. NEC facilitates connections between its members and the Singaporean energy business and research community with objective to derive **joint business development** in the region. To this end, Singapore business and enterprise development institutions are supporting partners to NEC (see Supporting Partner below).
 3. NEC supports its members to enter into single or joint **energy projects/initiatives** within the region. To this end, NEC will facilitate advisory services from NEC cooperation partners, including financing and funding services from e.g. Innovation Norway and utilize the official “Team Norway”⁶ contact network in Asia.
 4. Through the partnership with Nanyang Technological University, NEC can offer its members access to various **physical infrastructure** in Singapore. This may range from short-term need of office facilities, via needs for demonstration/promotion facilities to laboratory infrastructure to test, verify and demonstrate technical solutions.
 5. NEC will facilitate **research cooperation** between Norwegian and Singaporean institutions and universities. To this end, the biannual technical workshops organized by NEC and NTU will form the basis for developing joint projects; identifying funding schemes; and connecting research focus to business/market needs.
 6. NEC can offer **special services** Norwegian companies with ambitions to enter the Asian energy markets. Examples:
 - “Asian Market Entry support” services⁷ include an expert panel consisting of technology experts (from university, research institution) and market experts (NEC members, supporting organization) which will do a high level assessment of the company’s technology and business model. This will lower the cost and risk of entering new markets.

⁵ In 2017 the plan is to only attend the Singapore International Energy Week in October.

⁶ «Team Norway» in this context is defined as the institutions supporting Norwegian interests abroad, including Innovation Norway, Embassies, business associations etc.

⁷ These services are chargeable in order to give compensation to the expert panel.

- Laboratory facilities and access to academics, researchers and experts to perform technical test, verification and demonstrations.⁸
7. NEC will establish operate an **information hub**, including:
- Gathering and organizing relevant news and information regarding energy opportunities in the region, including tenders, marked demands, technology offerings etc. NEC will cooperate with i.e. IPI Singapore’s “technology marketplace”⁹ etc., for information feeds.
 - The NEC website will post (passively) and push (actively through news lists) general information and member specific information
 - Establish social media platforms for member discussion, e.g. Yammer or discussion groups.
 - Bridge communication between research and university partners, including institutions such as the Research Council of Norway and National Research Foundation of Singapore.
 - NEC will also be a instrument to bridge communication between Innovation Norway offices in the region and the energy technology/company community in Norway.

Members:

NEC members fall into the following categories:

1. **Category 1 companies.** Norwegian energy companies with a long-term agenda within the energy area established in Singapore/Southeast Asia. NEC offers a professional network to discuss business expansion opportunities; access to new technology; facility to develop, test and deploy new technologies and access to leading expertise within the energy area.
2. **Category 2 companies.** Norwegian technology and service companies aiming to start up business or offer their technologies within the energy are to Southeast Asian markets. NEC offers a community and facility to verify, adapt and demonstrate their technologies; and to refine their business strategies in an Asian context.
3. **Norwegian research institutions and universities.** Institutes with existing and/or planned research activities within the energy area will use NEC to facilitate and support relations with their Singaporean counterparts¹⁰.
4. **Norwegian energy clusters and associations.** Examples: Norwegian Energy Partners; the newly established FMEs (Centres for Environment-friendly Energy Research), National and Global Centers of Expertise (NCE/GCE) and other cluster. These organizations will not have direct commercial activities in the region, but rather serve as channels between their own member companies and organizations and the markets in the region.

⁸ These services are offered by ERI@N and are subject to separate agreements between NTU and the member.

⁹ <https://www.ipi-singapore.org/>

¹⁰ Although the main academic partner in NEC is ERI@N, NEC is not excluded from facilitating cooperation with other academic institutions in Singapore.

Cooperation partners¹¹

Founding partners of NEC is Innovation Norway and the Research Council of Norway, supported by the Royal Norwegian Embassy in Singapore.

Energy Research Institute @ Nanyang Technological University (ERI@N). The partnership between NEC and ERI@N ensures NEC members access to top notch local university and research expertise and facilities. It enables the members to evaluate their technologies by local experts; to test and demonstrate technologies using university laboratory and test facilities and to continuously improve their technologies and services in cooperation/projects with the university professors and researchers.

Supporting partners are Norwegian and Singaporean companies and institutions that are not paying members of NEC, but are offering services to NEC on a pro rata or in-kind arrangement. These include universities, government organizations and even companies.

NEC has partnership with **Singapore government institutions** supporting entrepreneurship and technology development, such as IE (International Enterprise Singapore) and IPI Singapore. This ensures that NEC members have access to Singaporean business eco system for partners, investors, technology adapters and customers.

NEC will cooperate with **Innovation Norway** offices in Asia (India, Thailand/Myanmar, Vietnam, Malaysia and Indonesia) to connect technology solutions with market needs in the region. NEC will furthermore establish working relationship with Innovation Norway's strategic knowledge "HUBs" on "Clean Energy", "Sustainable Societies" and "Ocean Space" to utilize the company, technology and market knowledge embedded in these HUBs, and also serves a market development channels for Innovation Norway clients.

Organization structure:

NEC is technically a project under Innovation Norway, and governed by a steering committee from Innovation Norway and Research Council of Norway. NEC is not a legal entity nor have any employees. The NEC Director has the overall responsibility of the NEC operations. The Director is employed by Innovation Norway Singapore. NEC does not cover any salary costs for the director.

NEC will procure additional support from e.g. NUS (secretarial functions) and IN (trainee) for operational tasks such as administration of members, accounting, facilitation of meeting places, website operation etc.

The members will have strong influence on the activity plan of NEC. At the member meetings in May and December, the activity plan for the next half year will be discussed and agreed upon by the active members.

¹¹ NEC is primarily an instrument to support Norwegian companies. However, Singaporean and international companies may become members of NEC if it serves the main objective of NEC.

Membership fees:

NEC is not-for-profit and the annual operational costs shall ideally be covered by membership fees only. The membership fee will be set to cover the cost estimates for the following year based on costs estimates and expectation of number of paying members¹². The operation cost for NEC includes expenses related to meeting places (international conferences, seminar, workshop, regular meeting), operation of website and news services and hired personell when required. The annual operation cost depends on the activity plan, and when in full operation is expected to be in the order of 100 thousand S\$.

Based on the assessment of members for 2017, the prosed monthly¹³ membership fee is set to:

- Category 1 companies (larger, established companies): 750 SGD / month
- Category 2 companies (SMB, start-ups): 500 SGD / month
- Research institutions and universities 750 SGD/month

¹² The cost and income (fee) structure will be adjusted to match actual activity level and number of members. This will be done in agreement with the members and governing board of NEC and adjusted annually.

¹³ The reason the fees are monthly is because Category 2 companies may sign up for shorter periods than one year. Category 1 companies will be requested to pay on annual basis.

Proposed activity plan for 2017 (under development)

Date	Activity	Participants	Thematic
February 20	Formal establishment of NEC	NEC members and prospects.	Inauguration ceremony.
Feb. 20-23	1 st Research Workshop at ERI@N.	Norwegian universities and research institutions. Funding and govt. agencies. No. and Sing. Companies. Organizers: NEC and ERI@N.	Energy Research: <ul style="list-style-type: none"> • Energy System Integration • Energy efficiency • Maritime energy, including LNG • Renewable energy
March	NEC Member meeting. @ Energy Market Authority (TBC)	NEC members + external experts.	Singapore energy system: <ul style="list-style-type: none"> • Status and road maps for the Singaporean energy systems and market. • Regional market developments
April 24-28	No-Sing LNG Forum. In connection with Singapore Maritime Week, Apr. 24-28.	LNG related companies and institutions. Govt. reps. Organizers: NEC, Norwegian LNG network, IE Singapore, MPA.	LNG market development: <ul style="list-style-type: none"> • LNG value chain (bunker, transport, storage) • Technology/risk/standards • Environmental and social aspects • Market outlook in southeast asia.
Mai	NEC Member meeting. @ maritime energy company.	NEC members + external experts.	Maritime energy: <ul style="list-style-type: none"> • Clean shipping (LNG, electrification, H2/FC) • Subsea power systems • Market trends and roadmaps
June	Seminar: regional energy market – insights in trends and opportunities.	NEC members, invited Innovation Norway market advisors, others. (open seminar?).	Market trends in Southeast Asia (+India): <ul style="list-style-type: none"> • Presentation from Indonesia, Thai/Myanmar, Vietnam, (India?) • Roadmaps, trends, opportunities, challenges. NEC half-year reporting and planning
August	NEC Member meeting. @ REC (TBC)	NEC members, REC and invited external experts to give presentations.	Renewable energy: <ul style="list-style-type: none"> • Solar/PV • Wind, geo, ocean, other • Market potential and trends
September	NEC Member meeting. @ company/agency related to smart nation	NEC members + external experts.	Smart Nation: <ul style="list-style-type: none"> • Smartgrid/system integration • Smart energy generation • Smart energy consumption • Energy informatics
Oct. 23-27	Two events: <ul style="list-style-type: none"> • Research seminar: ACEPT2017 • Business expo/conf. In connection with Singapore International Energy Week (SIEW). Coorganized with NTU. 	NEC members. Seminars open for invited external participants.	General/wide area: ACEPT2017: (topics TBD) Business expo/conf.: Norway booth for NEC members. Seminar – topics to agreed with members.
November	NEC Member meeting. @ company/agency related to energy efficiency	NEC members + external experts.	Energy efficiency: <ul style="list-style-type: none"> • Buildings, services and industry focus.
December	Year-end celebration	NEC members – invited guests. Keynote speakers.	NEC half-year reporting and planning <ul style="list-style-type: none"> • Status and review of the year's activity. • Input from members on next year activity.

Communication channels

NEC will build a knowledge communication structure – both for the NEC members (concrete opportunities etc.) and for an external audience (general market intelligence). NEC aims to be an information hub for the other Innovation Norway offices in the region versus Norwegian energy communities.

NEC will operate the following communication channels:

- A website with public and membership pages
- A newsletter services for general market and technology news – direct mail out
- An discussion forum for members based on social media platform such as Yammer

The trainee engaged by NEC will primarily work on the social media and communication channels in NEC, including collecting and processing data, handing members pages, operate the website and be active on the social media.