COP 24 SHOWCASE MATERIAL

PRESENTATION-3: MEGA PROJECTS SUSTAINABILITY OPTIMIZATION AND DEVELOPMENT
MEGA PROJECTS AWARENESS AND OPTIMIZATION

Managing SABIC Assets by Designing, Facilitating and supporting the Development, Improvement & Execution of new projects to achieve SABIC Sustainability Corporate Goals by 2025
SABIC PLANT SUSTAINABILITY KPIS

Base Year 2010

- GHG Intensity: 9.3%
- Water Intensity: 8.8%
- Energy Intensity: 7.6%
- Material loss Intensity: 35.2%

Target Year 2025

- GHG Intensity: 25%
- Water Intensity: 25%
- Energy Intensity: 25%
- Material loss Intensity: 50%

Target Year 2025

Year 2017

- GHG Intensity: 25%
- Water Intensity: 25%
- Energy Intensity: 25%
- Material loss Intensity: 50%
"Mega projects: The sustainability functions (CSD, EM&SI, E&PM PED) need to firmly hold to their process and do the needful to ensure the new assets meet sustainability criteria and avoid negative impact on SABIC 2025 sustainability targets (technology selection, integration,...). Waivers can only be given by the CEO (in the council) when not meeting these criteria. If project team wants to waive certain sustainability aspects, it needs to be brought through Sustainability council."
COMPLIANCE TO SABIC’S SUSTAINABILITY PROJECT FLOW

Life Cycle of Asset

DEVELOPMENT

EXECUTION

Project Stage

Business planning

Facility Scoping

Project Delivery

Project Phase

1-Concept Rationalization

2-Feasibility & Venture Philosophy

3-Project Strategy & Execution Plan

4-Design Basis

5-Basic Design & Appropriation

6A-Detailed Design & Appropriation

6B/6C-Construction & MC

7-Close Out & Re-Appraisal

Deliverables

SUSTAINABILITY BASELINE DEVELOPMENT/REVIEW

SUSTAINABILITY APPROPRIATION

Executing Sustainability Opportunity Assessment

Follow up and evaluation of identified action items

SUSTAINABILITY REQUIREMENT EPM-MPD-41-T-211

SUSTAINABILITY ASSESSMENT EPM-MPD-42-T-211

SUSTAINABILITY UPDATE EPM-MPD-43-T-209

SUSTAINABILITY CONFIRMATION EPM-MPD-44-T-211

SUSTAINABILITY UPDATE EPM-MPD-45-T-210

SUSTAINABILITY UPDATE

SUSTAINABILITY PERFORMANCE REPORT
SUSTAINABILITY PERFORMANCE APPROPRIATION AND MONITORING

PHASE 1: Concept Rationalization
- Process benchmarking
- Process baseline sustainability data appropriation.

PHASE 2: Feasibility & Venture Philosophy

PHASE 3: Project Strategy & Execution Plan

PHASE 4: Design Basis

PHASE 5: Basic Design & Appropriation

PHASE 6: Detailed Design & Appropriation

PHASE 7: Close Out & Re-Appraisal

Cost of optimizing Sustainability performance

Potential impact on Sustainability performance
SEEP NEW PLANT REQUIREMENTS

**Conceptual Design**
New plants are to be designed at the average of the 1st quartile of the latest available benchmark.
Submit minimum energy performance standards.

**Energy Assessment**
Conduct an energy assessment study of the new plant detailed design to ensure compliance with minimum energy performance standards before procurement.

**Operational Energy Efficiency**
After the performance guarantee test, the plant is given a grace period of 2 years in which it has to operate at a maximum margin of 5% of the design value.
The objective of a phase 3 Sustainability Opportunity Assessment on projects:

- To **challenge and identify opportunities** to improve sustainability impact and efficiencies of process and energy performance of the project.
- To ensure plant or project are built according to **world class** energy efficiency standards.
- To ensure projects is in line with **SABIC’s energy policy**.
- To ensure the **best feasible integration** ranging from proper equipment selection of new plants or projects with respect to energy, heat, water and material losses, including the utilities required.
- To evaluate the **integration between ISBL and OSBL** which is critical in this phase.
- Opportunity Assessment report is **agreed and signed** by all Stakeholders.
# PHASE 3: IMPACTING BEFORE DESIGN IS FROZEN THROUGH INTEGRATION AND OPPORTUNITY ASSESSMENT

## REQUIRE INPUT DATA AND INFORMATION

<table>
<thead>
<tr>
<th>SOA</th>
<th>Project scope and description</th>
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</thead>
<tbody>
<tr>
<td>SOA</td>
<td>Preliminary PFD, with relevant P, T, flow, duties</td>
</tr>
<tr>
<td>SOA</td>
<td>Process Block Diagram</td>
</tr>
<tr>
<td>SOA</td>
<td>Process and technology description</td>
</tr>
<tr>
<td>SOA</td>
<td>Proposed Plant Capacity and raw materials. For existing plants: Nameplate and current capacity and efficiency (RIP, DBN, Expansion project)</td>
</tr>
<tr>
<td>SOA</td>
<td>Plot plan</td>
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<tr>
<td>SOA</td>
<td>Utilities</td>
</tr>
</tbody>
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**SOA = Sustainability Opportunity Assessment**

## OUTPUT FROM SOA AND SUSTAINABILITY REPORT

- **List of identified Energy efficiency and Sustainability improvements and commitment to be included in project**
- **Action plan by project team on evaluating and incorporating the opportunities**
- **Sustainability Update Report EPM-MPD-43T-3B2, SABIC Enterprise Portfolio Management Tools and 4 KPI’s uploaded in KPI Tools**
- **Estimate sustainability footprint due to project and estimate agreed preliminary sustainability footprint referring to ISBL.**
- **Sustainability Preliminary Figure**
- **Sustainability Footprint data from current plant/affiliate/SBU – ISBL & OSBL.**
- **SEEC Submission according to EPM-MPD-33-P-005**

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**Facilitator**

EM&SI - Manufacturing

**Participants**

SBUTM, Licensor, SBU/AFFILIATE Process Team, CSD, SE,EPM PES and EPM Mega Project

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Planning and preparation and sharing of required information is the responsibility of TM/project owner
COMPLIANCE TO SEEC REQUIREMENTS PROCESS FLOW

PROJECT PHASE

1-Concept Rationalization
2-Feasibility & Venture Philosophy
3-Project Strategy & Execution Plan
4-Design Basis
5-Basic Design & Appropriation
6A-Detailed Design & Appropriation
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7-Close Out & Re-Appraisal

SEEC PROCESS

Sustainability Pre-Assessment → Technology Sustainability Assessment → Compliance to SEEC requirements EPM-MPD-33-P-005 → Compliance to SEEC requirements EPM-MPD-33-P-005 → Compliance to SEEC requirements EPM-MPD-33-P-005 → Compliance to SEEC requirements EPM-MPD-33-P-005 → PLANT PERFORMANCE REPORT

SEEC SUBMISSION

1ST SUBMISSION OF CONCEPTUAL DESIGN ENERGY INTENSITY ESTIMATE → 2ND SUBMISSION OF PROCESS ENERGY DESIGN REVIEW → Minimum Energy Performance Standard (MEPS)
The design MEPS is set at the average of 1st quartile.

Once the plant is operating under normal condition its energy intensity should be at maximum of design MEPS +5%.

Effective Energy Intensity (MEPS)

Benchmark of international comparable plant energy intensity

- 1st Quartile
- 2nd Quartile
- 3rd Quartile
- 4th Quartile
THANK YOU