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Assessment of Local Manufacturing of Electric Vehicle Service Equipment in the Philippines

05 June 2025 | 2–3:30 p.m. (GMT+8)

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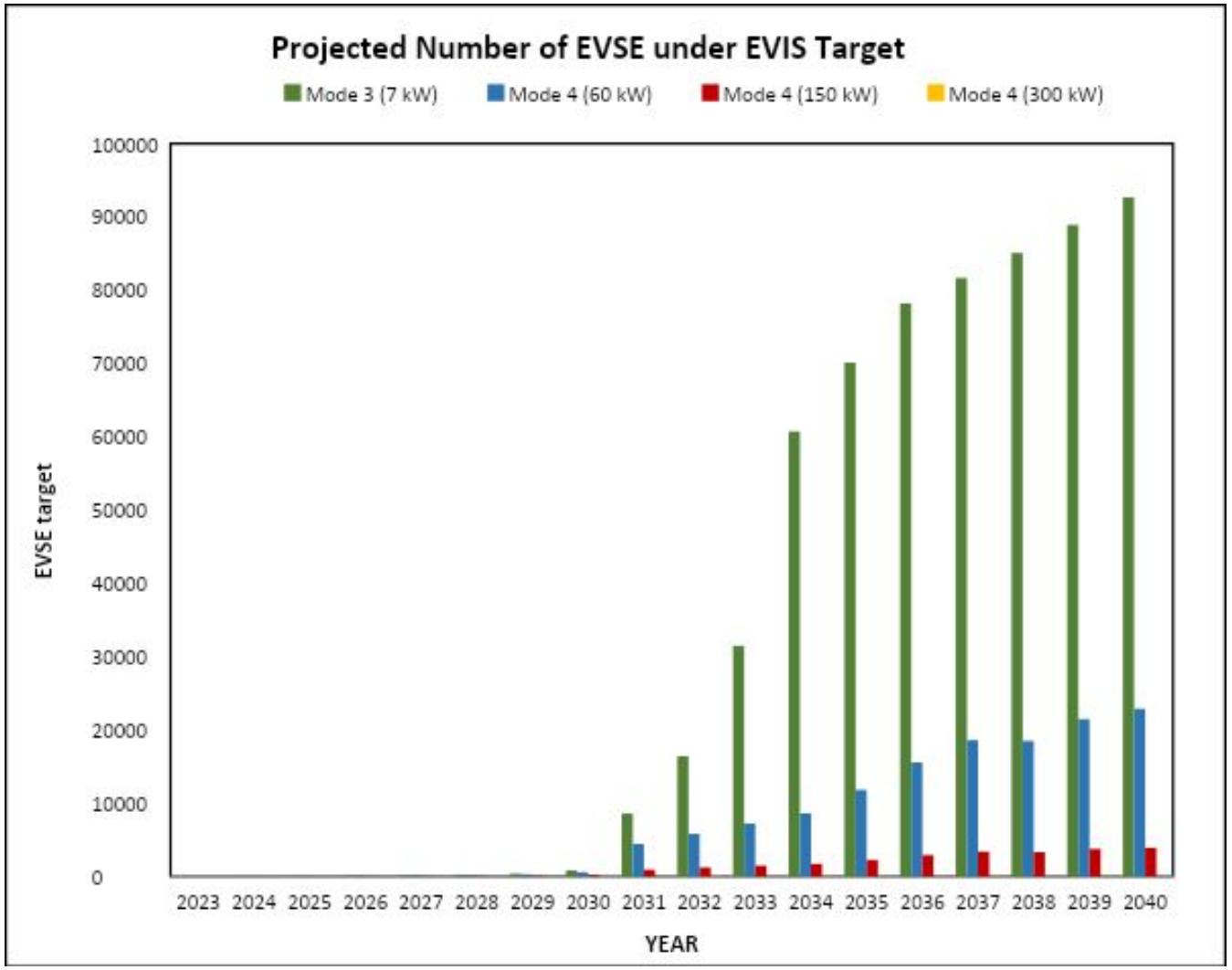
Economic analysis of EVCS Manufacturing in the Philippines

Number of EVCS under the EVIS Target



The graph illustrates the projected number of EVSE's for 18 years (from 2023 to 2040). The graph categorizes 4 types of EVSEs; (1) Mode 3 for AC and with 7kW capacity, (2) Mode 4 for DC with 60 kW capacity, (3) Mode 3 for DC with 150 kW capacity, and Mode 4 for DC with 300 kW Capacity.

Mode 3 with projected numbers of 615,472 units by 2040.

Mode 4 (60kW) with 6 units of EVCS in 2023 and with projected growth of 136,331 units by 2040.

Mode 4 (150 kW) starts with 1 unit of EVCS in 2023 and with projected numbers of 25,275 units by 2040.

Mode 4 (300 kW) is projected to have 13 units by 2031, reaching 219 units by 2040.

Note:

In this study, the projected target for Mode 1 and Mode 2 will be included in the EMS Report of which it is assumed that Mode 1 and Mode 2 are defined as Onboard Chargers.

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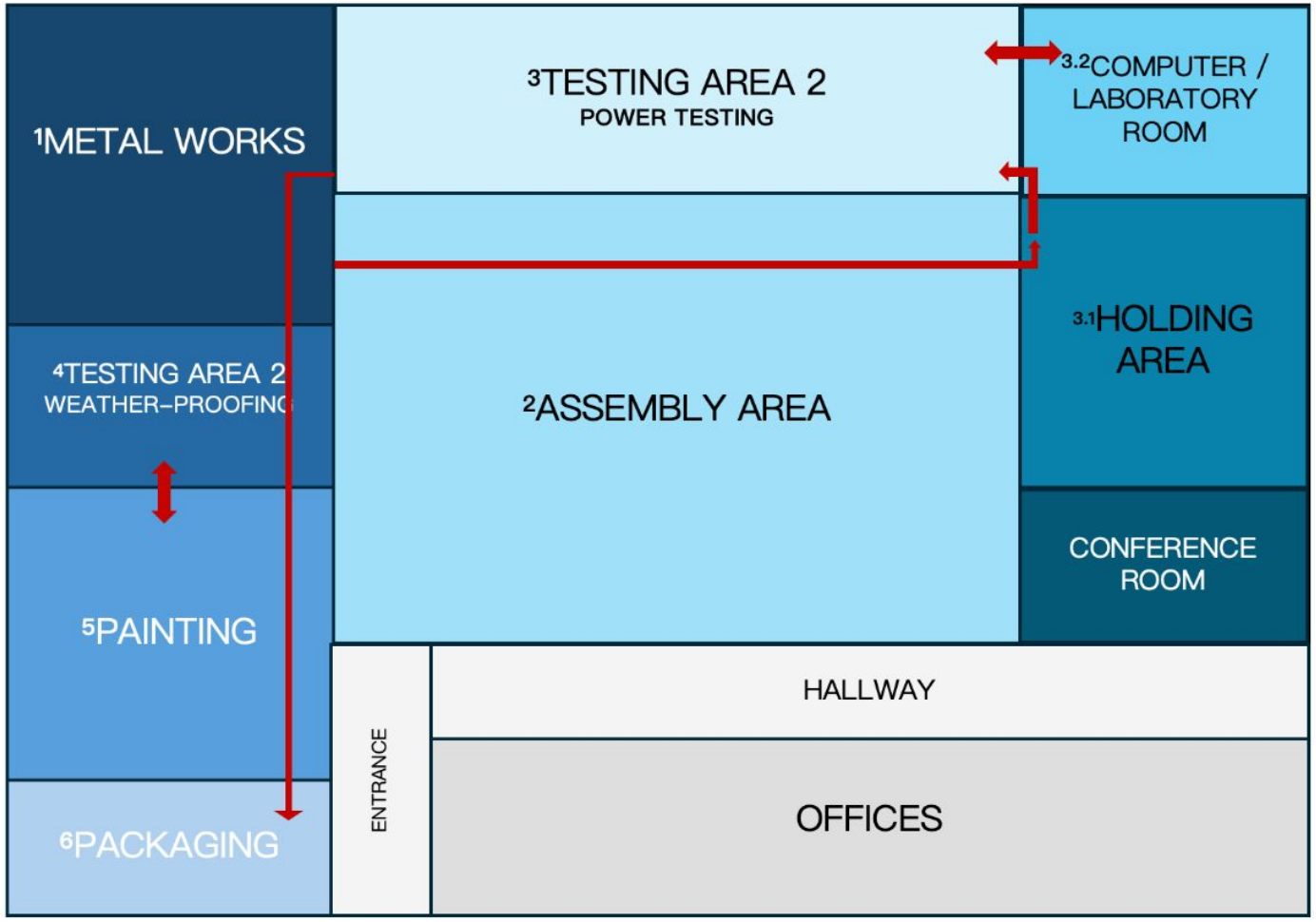


**Copied and Modified from a EVCS manufacturer during Site Visit*

Typical Workstation in an EVSE Manufacturing Plant		
1	**Metal Works**	This is where EV Charger shell and casing are assembled. Activities such as cutting, bending, and welding of EV Charger Shell and Casing are part of the process.
2	**Assembly of AC/DC EVSE**	Activities such as punching of EV Charger parts, mounting chips at the EV Charger Control Board, reflow soldering of surface mount electronic components to printed circuit boards (PCBs).
3	**Testing 1 (Power Performance)**	This is where performance testing is being done, activities such as power testing. Aging testing of the PCB for performance efficiency is also done in this stage.
4	**Testing 2 (Weather-proofing in Casing)**	This is where weather-proofing is done, rain testing and thermal heat testing is done on this stage.
5	**Painting**	After all the assembly and testing process, painting is done for each of the EVSE product. This improves the appearance and enhances the quality of the EVSE.
6	**Packaging**	Packaging is done to protect its contents from any damage that could happen during transport, handling and storage.

Economic Analysis Assumptions and Descriptions:CAPEX

In the economic analysis of EVCS manufacturing capital expenditures, the following cost components are considered: (1) **Capital equipment cost**, (2) **Building cost**, (3) **Land cost**, (4) **Direct cost**, and (5) **Indirect costs.**

Capital Investment Cost	
Component	**Description**
Capital Equipment	This includes the cost of equipment and facilities for the Assembly Area, Testing Area, and other Service Facilities.
Building Cost	The commercial building cost per square meter in the Philippines is 10,900/sq.m., Source: Statista, 2024
Land Cost (Direct Cost)	Land Cost from PEZA in Mactan is 5000/sqm. Using BTC Area of 5500 sq.m, land cost was determined. Source: PEZA, 2024
Direct Cost	Material and labor in actual installation of complete facility. This includes equipment installation, instrument and control installation, piping installation, electrical installation, insulation and painting, building process and auxillary, service facilities and yard improvement, and land processing.
Indirect Cost	Cost incurred in engineering and supervision, construction expenses, constructor fee, legal fee, and contingency. In the assumption we use 15% of the total investment cost. Costs incurred in connection with (i) the design, engineering, test and scale up of the manufacturing process used to produce any licensed product for commercial sale, (ii) introductory promotion and marketing of any Licensed Product, and (iii) registration.

Note: The estimated costs were derived from surveys, site visits, and focus group discussions (FGDs) with BTC Power in Cebu, Philippines, an EVCS manufacturing plant in the Philippines. Additionally, these values were validated through surveys and meetings with foreign EVCS manufacturing companies, including LOCA, a leading EVCS manufacturer in China and the largest EVCS network provider in Laos.

Source for the estimates on Direct Cost and Indirect cost Cost: Estimation of Capital Investment Cost.

Material Costing and Industry Review

The following are the estimated costs of Electric Vehicle Charging Stations (EVCS) for both AC and DC. The table presents material costing from local industry. 4 EVCS modes with 5 capacity levels.

Mode Type	Capacity (kW)	Charging Type	BOM Cost (Peso)	BOM Cost (USD)	BOM Less 10% (Economies of Scale)	BOM Cost less 15% Tax	Total Mfg Cost (25%) (Economies of Scale + Tax)	Material Cost in USD	Total Mfg Cost in Php
Mode 3	7	AC	₱41,315.00	$712.33	$71.23	$106.85	$178.08	534.25	₱30,986.25
Mode 4	60	DC	₱1,254,857.14	$21,635.47	$2,163.55	$3,245.32	$5,408.87	16,226.60	₱941,142.86
Mode 4	150	DC	₱3,137,142.86	$54,088.67	$5,408.87	$8,113.30	$13,522.17	40,566.50	₱2,352,857.14
Mode 4	300	DC	₱6,274,285.71	$108,177.34	$10,817.73	$16,226.60	$27,044.33	81,133.00	₱4,705,714.29

Material Cost Benchmarking

Mode	Capacity (kW)	Charging Type	China (Loca), X Factory	Thailand X Factory	Philippines, X Factory
Mode 3	7	AC	$180	$ 536.37	$ 534.25
Mode 4	60	DC	$4300	-	$ 16,226.60
Mode 4	150	DC	$10,750	-	$ 40,566.50
Mode 4	300	DC	$21500	-	$ 81,133.00

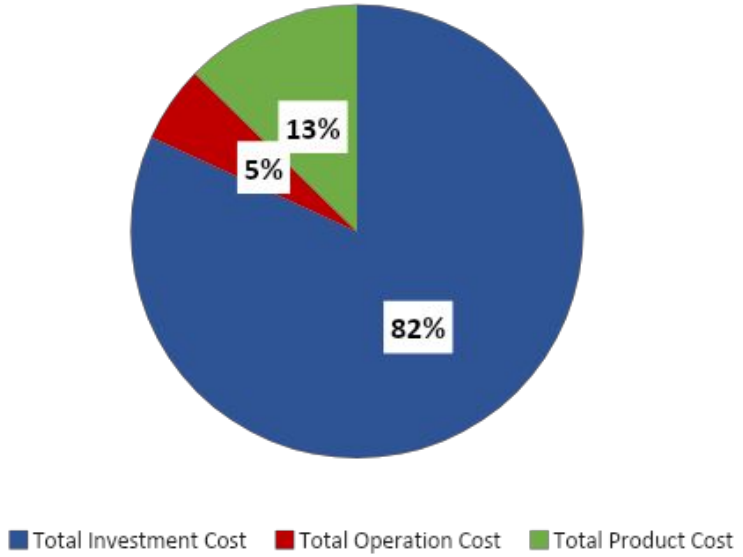
Notes:

Cost components were reduced to 25% of which, Economy of scale was reduced to 10%, Cost of local and import tax is 15%.

Cost Structure for EVSE Manufacturing: Cost to Build for 2025

Estimated Cost Structure for EVSE Manufacturing Plant
Cost to Build for 2025

Financial Assumptions	Unit Cost			Total
A. Investment Cost				
Capital Equipment Cost	2166961		$	2,166,960.50
Land Site and Development Cost	758621		$	758,620.69
Direct Cost	2529078		$	2,529,078.44
Indirect Cost	1946002		$	1,946,001.92
Total Investment Cost			**$**	**7,395,306.55**
B. Operation Cost & Variable Cost	**Unit Cost**			
Labor	205359		$	205,359.31
Utilities	144209		$	144,208.62
All Other Operation Cost	143441		$	143,441.38
Total Operation Cost			**$**	**493,009.31**
C. Product Cost	**Unit Cost**	**Quantity**		**Total**
Material Cost (AC, 7kW)	534	40.00	$	21,369.83
Material Cost (DC, 60kW)	16227	57.00	$	924,916.26
Material Cost (DC, 150kW)	40567	5.00	$	202,832.51
Material Cost (DC, 300kW)	81133	0.00	$	-
Total Product Cost			**$**	**1,149,118.60**
A+B+C			**$**	**9,037,434.45**

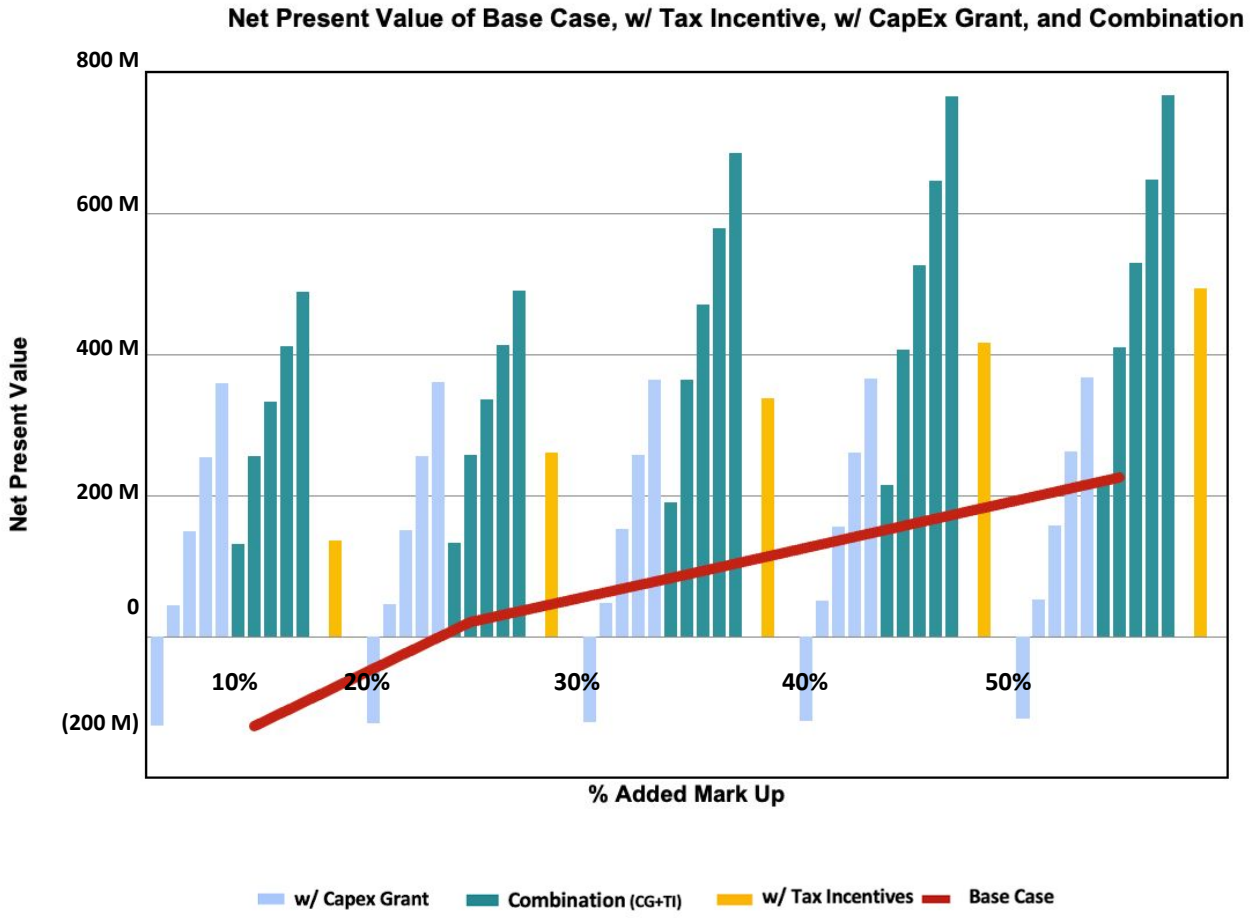


Notes for Cost to Build by 2025:

Using the assumptions, the ff were shown;

1. 5% of the EVCS Manufacturing goes with the total operational cost, 13% with the product cost, 82% with the investment cost.
2. Overall, the total cost for EVSE manufacturing using the target production for 2026 is around **$ 9,037,434.45USD.**

NPV for EVSE Manufacturing : 15 Years Cash Flow



Mode	Capacity (kW)	Charging Type	Material Cost	Selling Price/Added Mark Up				
				10%	20%	30%	40%	50%
Mode 3	7	AC	$534.25	$587.67	$641.09	$694.52	$747.94	$801.37
Mode 4	60	DC	$16,226.60	$16,226.60	$19,471.92	$21,094.58	$22,717.24	$24,339.90
Mode 4	150	DC	$40,566.50	$44,623.15	$48,679.80	$52,736.45	$56,793.10	$60,849.75
Mode 4	300	DC	$81,133.00	$89,246.31	$97,359.61	$105,472.91	$113,586.21	$121,699.51

Notes:

Base Case: *No incentives and grants.*
CapEx Grant: *CapEx grants percentage covered from 10-50%*
Tax Incentive: *Customs duty exemption for importations of capital equipment, raw materials, spare parts, or accessories. VAT exemption on importation and VAT zero on domestic purchases. VAT exemption for up to 15 years.*
Complete: *Combination of all packages (Tax and CapEx)*

Techno-economic analysis assumptions:
1. 15 years cashflow.
2. Tax Incentives includes import duties and import taxes of 15%, a tax incentive is also applied in the investment and material cost with 0 VAT on domestic purchases.
3. A corporate and interest rate is also applied in the financial model.

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Policy, Strategy, and Business Model Recommendation

Recommendation

Target Market and Production Strategy

- Integration with 2-3 wheeler manufacturing - aligning EVSE production with the local 2-3 wheeler market (Mode 2) ensures a steady demand.
- Market-driven import vs. local production - low demand may necessitate the import of EVSE units while high demand justifies local production, making large-scale manufacturing more viable.
- Economies of scale - higher production volumes increase profitability. Insights from Focus Group Discussions (FGDs) with Original Equipment Manufacturers (OEMs) indicate a strong market opportunity for EVSE manufacturing, particularly for bulk orders.
- Short-term (2025-2030) - given current demand projections, importing EVSE shows to be the most viable strategy.
- Long-term (2030-2040) - if demand grows as expected, it will be feasible to establish a local manufacturing facility.
- Expanding market opportunities - to compensate for the initially low local demand, exploring export possibilities is essential.

Potential Products for Localization

- Power modules and PSUs are typically outsourced to China or Taiwan due to lower costs, but there are local manufacturers.
- Wire harnesses, casing/enclosures, connectors, and bus bars can be sourced locally to support domestic manufacturing.
- Firmware development can be conducted in-house.
- Incentives for local content - implement policies to encourage the use of locally sourced materials and components.

Infrastructure

- It is recommended to allocate capital expenditures for an in-house testing facility. EVSE testing facilities are currently none available in the country. Establishing a local facility will enable pre-testing before audits, ensuring compliance and quality assurance. Developing a “local” testing centers or establishing partnerships with third-party testing facilities will reduce cost in the capital expenditures.
- PEZA requirements - sourcing materials locally can help reduce costs by minimizing duties and import taxes.
- Explore the potential application of VAT incentives under Create 2 such as for electricity cost.
- Implementation of standards - fully enforce industry standards to enhance consumer protection and prevent the influx of non-standardized equipment into the market.

Recommendation

Market Positioning & Regulatory Considerations

- Competing with China’s economies of scale is challenging; therefore, developing localized features tailored to the Philippine market is essential.
- Despite China's cost advantage, product certification for international standard conformity (under the Department of Trade and Industry) is crucial for compliance and market approval. This requirement can serve as a barrier for lower-quality imports, providing an opportunity for locally manufactured products to gain a competitive edge.
- To ensure safety, reliability, and regulatory compliance, products must adhere to; TÜV Standard Testing and Certification, International Electrotechnical Commission (IEC) standards, and other relevant regulatory bodies.

Supply Chain & Key Component Sourcing

- High-quality cables and electronic components: Phoenix Contact (Finland).
- Local manufacturing potential - feasible for the majority of the components.

Pricing Strategy

- Findings from the techno-economic analysis suggest that with the 2025-2030 Target, with 30% added markup (for selling price), shows to be financially sustainable. Tax incentives play a major role for higher NPV and shorter payback. CapEx grants help improve NPV but do not drastically reduce payback periods unless combined with tax incentives. The ideal scenario is at 30-50% markup with tax incentives and a 30-50% CapEx grant, resulting in high NPVs and short payback periods starting at mostly after 5 years.
- For the 2030-2040, payback is after 2 years for the base case and with CAPEX grant, while with tax incentives included, positive cash flow is expected. Tax incentives alone significantly improve financial viability, making even a 10% markup profitable in 1 year (with Tax Incentives and in combination with Capex Grants). CapEx grants improve NPV but are not as impactful without tax incentives. The best scenario is a combination of tax incentives and a CapEx grant, which leads to immediate positive cash flow and high NPVs.

Tax Incentives & Financial Viability

- Tax incentives positively impact Net Present Value (NPV), improving the project’s financial feasibility given that target volumes are met.

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