Smart Solar Climate Risk Scenario Analysis

1. Transition Risk: Failure to Meet Greenhouse Gas Targets

Orderly Transition Scenario (1.5°C World)
In a scenario where global climate policies are implemented decisively, with carbon pricing and strict emission regulations in place, Smart Solar Technologies would face increasing regulatory and market pressures. In this scenario, failure to achieve the company's 2040 net-zero commitment could result in a significant decline in brand value and market reputation, as well as exposure to regulatory sanctions. Particularly in an environment where markets and investors have transitioned to a low-carbon economy, a company that fails to meet its targets risks losing competitive advantage and could be removed from sustainability indices, making access to financing more difficult.

Disorderly Transition Scenario (Expected Policies)
In a world where climate policies progress more slowly and in a fragmented manner, the risks associated with deviation from targets may be partially reduced. Penalties for failing to reduce emissions may not be very strict initially; however, unexpected policy changes could suddenly be implemented in the medium term. In this scenario, Smart Solar Technologies' failure to meet its emission target may not lead to severe penalties at first, but could later result in adaptation risks in the face of sudden regulatory changes. Moreover, as customer and business partner sustainability expectations gradually increase, unmet targets could cause a loss of sales and difficulties in partnerships.

"Hot World" Scenario (Insufficient Action, ~3°C World)
In a scenario where global climate action is insufficient, leading to around 3°C warming, low government pressure means that direct legal sanctions for failing to meet emission targets would likely remain relatively limited. However, climate change–related physical risks—such as extreme weather events and rising temperatures—would become severe in this scenario, increasing Smart Solar Technologies' operational costs. Rising cooling and energy demands, along with production disruption risks, could make emission reduction efforts more difficult. Even if global action is insufficient, some leading markets may still adhere to their own carbon-neutral targets; in this case, emission performance would remain important for companies exporting to these markets. If Smart Solar Technologies fails to achieve its set targets, it may face competitive disadvantages and a loss of investor confidence in these markets. Thus, even with low regulatory pressure, long-term reputational and market risks would persist.

2. Transition Risk: Biodiversity Loss and Ecosystem Adaptation Risk

Orderly/Joint Action Scenario (1.5–2°C World)
In a future where decisive steps are taken globally to combat both climate change and biodiversity loss, regulations and public pressure would be at the highest level. In this scenario, countries would implement strict measures in line with international agreements such as the Global Biodiversity Framework 2030. For Smart Solar Technologies, this would require conducting comprehensive ecological assessments at each project site and taking biotic sensitivities into full account. If the company's activities were to harm an ecosystem, the risk of license revocation or heavy fines would be extremely high. On the other hand, strong environmental policies could make permitting processes more predictable and standardized, creating an advantage for proactive companies.

Disorderly Transition Scenario (Sustainable Consumption–Production Oriented Partial Policy)
In this scenario, environmental protection policies would be implemented but would lack consistency and wide coverage. While strict biodiversity conservation regulations may be present in some regions, enforcement could be weak in others. For Smart Solar Technologies, uncertainty and regulation-related risks could increase: a project might start under minimal requirements but later face sudden implementation of stricter environmental rules during execution. A company that fails to manage biodiversity risk could face mid-project shutdowns or unexpected additional investment obligations. Financially, operational delays and rework costs could arise.

Hot World Scenario (3°C World)
In a world where global climate action is insufficient and environmental protection agendas are deprioritized, formal regulations could remain weak. At first glance, this may appear to provide a more "comfortable" environment for the company; however, a 4°C warming would accelerate ecosystem degradation. In this scenario, ecosystems would be severely affected by climate change: droughts, forest fires, and invasive species would damage habitats. Smart Solar Technologies' projects would be built in these fragile environments, further increasing ecological risks. Rising temperatures and irregular rainfall patterns could accelerate soil erosion or disrupt the natural balance already damaged at project sites. Even with low regulatory pressure, unexpected environmental issues during project execution could result in performance losses. Furthermore, international customers and financial institutions may impose their own environmental standards, potentially pushing companies that fail to meet them out of the market.

3. Transition Risk: Technological Investment Risk

Orderly Transition Scenario (Rapid Technological Transformation – 1.5°C World)
In a scenario where strong R&D incentives and strict emission standards are implemented to achieve global carbon-neutral targets, there would be rapid growth in clean energy technologies. Solar panel efficiencies could improve rapidly, and breakthroughs in materials science could render existing products obsolete within a few years. For Smart Solar Technologies, this would mean continuously shortening investment cycles: the current production line could quickly lose competitiveness due to rapid technological change. If the company fails to dynamically update its R&D investments and product portfolio, customer demand in a 1.5°C world would shift toward higher-efficiency and more durable next-generation panels, leaving outdated products unsellable.

Disorderly Transition Scenario (Delayed/Contradictory Technological Development)
Due to inconsistencies in climate policy, the development of clean energy technologies could vary across regions. In this scenario, while some markets demand the latest technology, others may continue to favor older-generation panels based on cost considerations. For Smart Solar Technologies, this would make investment risk harder to predict: it may be unclear when and which technology to adopt. The company could invest in an innovative technology only to find the market unprepared, resulting in low sales—or, conversely, it could delay adoption and miss market demand. In such a scenario, market research and flexibility become critical. If technological investment risk materializes, the company could face idle capacity or periods of inefficient production.

Hot World Scenario (Slow Technological Progress – 3°C World)
In a world where global climate action is weak, the pace of clean energy technology development may slow. As fossil fuel use continues, resources allocated to renewable energy R&D could remain limited. In this scenario, the lifespan of Smart Solar Technologies' current investments would likely be longer, as technological advancements would be fewer. At first glance, technological investment risk may appear low: a production line could remain relevant for a longer period. However, slower

innovation could cause the company to fall behind in technological development. Even in a 3°C world, market dynamics would not be completely stagnant—solar technologies would continue to improve for reasons such as energy security and cost competitiveness. If Smart Solar Technologies fails to make improvements to its products despite the slower overall R&D pace, it could fall behind competitors or become unable to compete with fossil alternatives. Moreover, high physical risks (extreme heat, dust storms, etc.) could create new requirements for panel technology, such as more durable designs. While low technological investment may initially seem like a cost advantage, an outdated product portfolio could threaten the company's long-term financial sustainability.

4. Transition Risk: Waste Management and Resource Efficiency Risk

Orderly Transition Scenario (Strict Sustainable Production–Consumption Policies)
In a future aligned with the 1.5°C world target, the concept of a circular economy becomes central to regulations. Governments mandate "Zero Waste" policies and impose product life cycle responsibilities on producers. In this scenario, waste management and resource efficiency risk would be at its highest level for Smart Solar Technologies because companies that fail to comply could be eliminated from the market. Firms that do not invest in waste disposal infrastructure or increase recycling rates would face high taxes and quotas. If Smart Solar Technologies fails to fully implement circular economy principles, its operational continuity could be disrupted due to permit cancellations under environmental legislation, or it could face regulatory barriers in export markets due to non-compliance.

Disorderly Transition Scenario (Insufficient/Contradictory Waste Policies)
In a global transition toward a circular economy, countries may progress at different speeds; while some regions advance, others may have limited implementation of circular economy practices. For Smart Solar Technologies, this environment would present both risks and opportunities. On one hand, in markets with strict regulations, if waste management practices are underdeveloped, the company may be unable to export its products or may incur extra compliance costs (documentation, certifications). On the other hand, in local markets with weaker regulations, it may not feel significant short-term enforcement pressure. However, failure to recognize waste management risk in such an environment could lead to complacency; later, sudden regulatory changes could increase operational risks (e.g., Turkey suddenly adopting EU-standard mandatory recycling targets). Financially, impacts would generally be felt through operational inefficiency and waste: during periods of high raw material prices, a company that does not recover materials would incur losses.

Hot World Scenario (High Warming – Resource Scarcity and Waste Problems)
In a future where global warming exceeds 3°C, climate policies would have been weak. In this scenario, official circular economy pressures may be low; however, physical realities would take over. Rising temperatures and extreme weather events could cause certain natural resources to become scarce. In such a world, raw material prices and availability would fluctuate unpredictably. A company with weak waste management and no recycling infrastructure would be unable to offset raw material shortages by reusing its own waste, leading to a serious decline in production capacity. Additionally, high temperatures and environmental degradation could make the safe storage of certain waste materials more difficult (e.g., heavy rains could cause leaks at waste storage sites). While regulatory penalty risks might be low in this scenario, business continuity risk would be high. If the supply of a critical component is cut off, companies that have adopted circular economy practices could maintain production through recycling methods, while those that do not reuse waste might be forced to shut down production lines.

5. Transition Risk: Supply Chain-Related Reduction in Production Capacity

Orderly Transition Scenario (Planned and Diversified Supply-Focused World)
In a scenario where a planned low-carbon transition takes place globally, supply chains are also transformed. Many industries abandon carbon-intensive production techniques and shift to clean technologies. While this may seem advantageous for Smart Solar Technologies, it also creates an adaptation requirement. If the company's current suppliers cannot keep up with this transformation, product quality or availability issues may arise. In a 1.5°C-targeted world, trends toward domestic production and geographically closer supply could also increase. In this scenario, if Smart Solar Technologies fails to diversify its supply chain with regional and low-carbon alternatives, the sudden restriction of a carbon-intensive raw material from distant regions could halt production. An orderly transition also means that suppliers failing to meet sustainability criteria would be eliminated. Therefore, if Smart Solar Technologies' suppliers have weak performance in areas such as environmental protection or human rights, the company's products may be excluded from new public tenders or international markets. If this risk materializes, a reduction in production capacity, delivery delays, and market loss would be inevitable.

Disorderly Transition Scenario (Transition with Regional Imbalances)
This scenario represents a transition in which global supply chains face unpredictable supply shortages, sudden supply interruptions, and regional inconsistencies. For Smart Solar Technologies, the most critical situation would be coping with sudden supply disruptions. If a key supplier suddenly reduces production or goes bankrupt (due to political pressure or economic hardship), the company's production line would be directly affected. In this scenario, companies without flexible supply strategies could be unable to fulfill orders due to lack of materials. If the risk materializes in a disorderly transition, Smart Solar Technologies' production plans would be subject to unpredictable interruptions.

Hot World Scenario (High Physical Risk)
In a scenario where climate action is insufficient and physical impacts are severe, supply chains would frequently be hit by both climate-related disasters and geopolitical tensions. Extreme weather events could flood mining sites in one region, while rising sea levels could damage port infrastructure and disrupt logistics. This situation would mean chronic uncertainty for Smart Solar Technologies: the flow of raw materials and critical components could be interrupted at any time. Inadequate global action would also mean that countries focus on their own interests, increasing trade restrictions. In a 3°C+ world, nations might adopt protectionist policies for critical areas such as food and energy, while seeking self-sufficiency in clean energy technologies. If Smart Solar Technologies fails to adapt its supplier portfolio to this new reality, it could face strategic vulnerabilities in products where it remains dependent on external sources. Business continuity could not be maintained, delivery times could be severely extended, and costs could rise unpredictably.

6. Acute Physical Risk: Heavy Rainfall, Storm Exposure (Factories)

1.5°C World (Orderly Transition and Limited Physical Impact Scenario)
Even in a scenario where global warming is limited to 1.5°C, an increase in the frequency of extreme weather events is expected compared to the past, although the most destructive impacts would be somewhat mitigated. In this scenario, Smart Solar Technologies' factories would occasionally be exposed to severe storms and heavy rainfall; however, infrastructure design standards would likely have been updated to reflect this "new normal," so resilience would be relatively high. That said, the insurance sector could raise premiums due to more frequent damage (even though the 1.5°C scenario is the most controlled case, upward pressure on policy costs would still exist). While Smart Solar Technologies' exposure to physical risks in a 1.5°C world would remain at a manageable level,

the risk would not be eliminated entirely: a rare but extreme storm could temporarily halt production and cause financial losses.

2°C–3°C World (Disorderly Transition / Medium-Level Physical Impact)
In a scenario where climate action falls short of targets and global warming reaches around 2.5°C, extreme weather events would become more frequent and intense. In this case, Smart Solar Technologies' factories would face a serious risk of storms or heavy downpours almost every year. Disorderly transition conditions could also mean that necessary adaptation measures in infrastructure development and urban planning are not fully implemented, leaving drainage, energy infrastructure, and other support systems in production regions insufficient. In such a scenario, both the damage potential of extreme weather events and the likelihood of surprise regulations (such as mandatory facility closures following certain disasters) would increase. Smart Solar Technologies' production performance could be interrupted several times a year, and repair and maintenance costs could rise significantly. Financial results could show declines due to increased insurance premiums and downtime.

3°C+ World (Hot World – High Physical Impact)
In a scenario where global warming is uncontrolled, the severity and frequency of floods and storms in Turkey and its surrounding region could reach record levels. In such a case, Smart Solar Technologies' production facilities would be under severe threat from successive disasters. Major floods occurring once a year could submerge factory sites, rendering material stocks and machinery unusable. Long-term production stoppages and failure to deliver promised orders could push the company into a crisis both financially and reputationally. Moreover, extremely high physical risks could create "insurance availability" risk—insurance companies might be unwilling to cover risks of this scale or may charge extremely high premiums. As a result, Smart Solar Technologies might have to carry some risks entirely on its own, making recovery from emergencies more difficult. In a 3°C+ world, inadequate infrastructure investments could mean that events previously occurring once in 100 years happen once every 10 years, exceeding design thresholds and causing unexpected structural failures. The 3°C+ hot world scenario poses the most severe risks to the physical security of factories and business continuity; if realized, it could create a state of emergency at the company scale.

7. Acute Physical Risk: Heavy Rainfall, Storm Exposure (EPC)

1.5°C Scenario (Orderly/Joint Action – More Controlled Physical Risk)
Even if the worst impacts of climate change are avoided globally, in a 1.5°C world, extreme weather events would not fully return to historical levels; they would persist at a somewhat higher frequency. In this scenario, Smart Solar Technologies' EPC (Engineering, Procurement, and Construction) projects would likely be executed under stricter construction standards and climate adaptation plans. As project designs would be based on up-to-date climate data, they would possess a certain level of resilience. However, an unexpected extreme rainfall event or a once-in-a-century storm could still cause delays of several weeks in a project schedule. While physical risks in a 1.5°C scenario would remain relatively limited, they could still create significant time and cost pressures for Smart Solar Technologies—especially as demand for renewable energy would be high, making on-time project completion critically important. If such risks materialize, the company would need to use insurance and crisis management tools to recover quickly.

2°C+ Scenario (Disorderly Transition – Intensified Regional Extremes)
In an environment where climate targets are not fully met, extreme weather events would increase significantly, with regional extremes becoming unpredictable. In this scenario, a project location for

Smart Solar Technologies could be hit by climate events far more severe than anticipated (for example, experiencing an unusually intense storm season). Disorderly transition conditions also mean uncertainty in project planning: stricter construction codes might suddenly be introduced for that region in the future, or local authorities could impose new restrictions following a disaster. As a result, EPC project timelines could be extended, and labor and equipment costs could rise. Additional unplanned works—such as extra excavation or infrastructure reinforcement—might be required. If this risk materializes, Smart Solar Technologies could face erosion in project profitability and a weakening of customer relationships due to quality-of-service concerns, potentially reducing contract renewal rates. If multiple projects are underway and all are affected by similar weather events, the company's engineering teams and equipment fleet could come under excessive strain.

3°C+ Scenario (Hot World – Severe Physical Threat)
In a scenario where climate change is uncontrolled, the challenges faced by EPC projects on-site would reach their peak. Nearly every year, multiple regions could experience record-breaking floods and hurricane-strength storms. Smart Solar Technologies would be struggling to protect ongoing projects while simultaneously conducting continuous repairs on operational plants. In this scenario, the occurrence of risk becomes almost inevitable and constant: a solar plant site could be flooded before installation is complete, requiring the entire project to be rebuilt—resulting in major financial losses. In facilities under maintenance agreements, breakdowns could become so frequent that maintenance teams might struggle to keep up, causing service levels to drop. As extreme climate events intensify, insurance companies might become reluctant to cover EPC projects and newly built plants, or they might demand high premiums, creating additional costs. Furthermore, under hot world conditions, ensuring worker safety on-site would become more challenging, and EPC operations could face critical setbacks in terms of sustainability, making traditional work methods no longer viable.

8. Chronic Physical Risk: Water Scarcity Risk

1.5–2°C Scenarios (Controlled Water Resources)
Even in a world where global warming is relatively limited and close to the Paris Agreement targets, water scarcity cannot be completely avoided, although the worst outcomes would likely be prevented. In these scenarios, semi-arid regions such as Turkey would still experience high water stress levels, but national adaptation policies (such as new dams, efficient irrigation techniques, and water recycling) may have been implemented. For Smart Solar Technologies, this would mean that water efficiency measures would become a standard practice at its facilities. In a 1.5°C world, water risk would be more manageable; however, hydropolitical tensions could emerge (e.g., disputes between neighboring countries over water resources), and water prices could rise. Under such conditions, the company might experience water scarcity risk in the form of planned restrictions or quotas; during regional droughts, industrial water usage could be limited.

3°C Scenario (Uncontrolled Environment – "Dry World")
In a world with high global warming around 3°C, severe droughts and water crises would be expected, especially in regions such as the Mediterranean basin. In this scenario, water resources in the areas where Smart Solar Technologies' production facilities are located would face extreme pressure; groundwater levels might fall below critical thresholds, prompting authorities to impose frequent restrictions on water use. The company might be forced to reduce production capacity due to insufficient water supply or be compelled to use lower-quality water in its processes, potentially affecting product quality. In a 3°C world, competition between sectors could intensify: agriculture, energy, industry, and households might compete over water allocation. In such conditions, public opposition to industrial water use could rise; Smart Solar Technologies' water consumption could be

questioned by local communities, with pressure to restrict it. As a result, in a hot world, water scarcity risk would become a constant challenge for the company. Financial impacts would include surging water prices and production losses during restriction periods. Operationally, risks could arise from potential production stoppages and increased equipment failure rates due to inadequate cooling. In this scenario, companies that fail to adapt would see their operational sustainability severely threatened.

Uncertain Transition Scenarios
(Note: While water scarcity risk is a physical risk, it can also be addressed under combinations of orderly/disorderly transition scenarios. In a moderate climate scenario, if Turkey delays climate adaptation measures, insufficient water management infrastructure could exacerbate the risk. In this sense, water risk depends both on the physical outcome of climate change and the country's water policies.)

9. Chronic Physical Risk: Extreme Weather Events Risk

Low Warming Scenario (Relatively Controlled Extreme Events)
In a 1.5°C–2°C world, extreme weather events would still occur more frequently compared to previous generations, but they would remain more manageable than in the most extreme scenarios. In this case, Smart Solar Technologies would need to make coping with several extreme weather events per year a routine part of its operations. Financial planning would have to account for a certain damage allowance and downtime. The insurance market would still function under this scenario, although premiums would be higher than in the past. Smart Solar Technologies could still insure its facilities and projects despite rising premiums, as the frequency of damages would remain balanced. The financial impact of this risk in a low warming scenario would likely be felt as a gradual erosion of profit margins; each year, a larger share of the budget would go toward maintenance/repair and insurance. Nevertheless, in a low warming scenario, no transformative crisis would be expected—risks would follow a controlled growth pattern, and the company could maintain operations as long as it adapts accordingly.

High Warming Scenario (Extreme Events as the New Normal)
In a 3°C and above global warming scenario, extreme weather events would become the "new normal." Events previously considered extreme would become commonplace. Risks faced by Smart Solar Technologies could arise not annually but perhaps every quarter. In this scenario, there would be constant pressure on economic performance: the insurance sector, in particular, would be critical, as structural strain would emerge from successive large-scale losses. Insurance premiums could spike sharply, or coverage terms could narrow. If Smart Solar Technologies becomes unable to insure certain risks, it could face a major gap in financial protection. For example, if flood coverage cannot be obtained for a newly built facility, any major damage to that facility would be fully reflected in the company's balance sheet. Moreover, as extreme weather events become persistent, a cumulative strain could develop on personnel and operations: productivity could decline, absenteeism could rise, and occupational safety incidents could increase. From an investor's perspective, a company with constant exposure to extreme events would see its risk premium rise, leading to higher financing costs and downward pressure on its share value.

Uncertain Transition Scenarios
In moderate warming scenarios combined with unexpected transition policies, the risk of extreme weather events would similarly increase. Uncertain transitions might also result in neglected adaptation infrastructure investments (e.g., insufficient funding), which could make physical risks worse than expected.

10. Transition Risk: Compliance Risk with Climate Change-Related Legislation

Orderly Transition Scenario (1.5°C World – Strict Policy Package)
In a scenario where a comprehensive and planned policy framework is implemented to meet climate targets, the standards companies must comply with would be extremely high. Carbon pricing would become widespread, and emission trading systems would be integrated globally. For Smart Solar Technologies, this would mean that virtually all operational processes would be subject to climate legislation. Mandatory carbon footprint labeling for products could be introduced. In the 1.5°C scenario, compliance risk would be at its highest because non-compliance would result in both severe legal penalties and minimal public tolerance. However, this scenario would also bring predictability: regulations would be clear, and timelines would be well defined. If compliance risk materializes in an orderly transition, it would largely be viewed as a management failure.

Disorderly Transition Scenario (Unexpected/Contradictory Policies)
In this scenario, climate-related regulations would vary from country to country or from sector to sector, and sudden changes and uncertainty would prevail. For a company like Smart Solar Technologies, which may operate internationally, this could mean having to comply with multiple different climate legislations at the same time. One market might not have a carbon tax, while another could impose one; in one country, product standards could be lax, while in another they might be extremely strict. This would increase the company's compliance costs, as it would have to prepare separately for each regulation. Uncertainty would also carry the risk of misguided investment: a technology or process invested in today to ensure compliance could become redundant if policies change tomorrow. In a disorderly transition scenario, compliance risk would mean failing to meet legal requirements in at least one major market or area, resulting in fines or loss of business.

No Policy/Hot World Scenario (3°C World – Adaptation-Focused Rather Than Mitigation Policies)
In a scenario where the world fails to combat climate change effectively, policy focus may shift from mitigation to adaptation. In such a case, transition risks would theoretically be lower because strict carbon regulations would likely not be implemented. Smart Solar Technologies might not face carbon taxes or stringent standards. However, even in this scenario, certain regions may continue to enforce their own policies. This creates a dual situation: the company might operate in some markets with almost no climate regulation while having to meet very high standards to enter others. Particularly in the EU and other leading regions, compliance with such rules would be essential to remain part of the global supply chain, and companies that fail to meet them would be excluded. Furthermore, in a 3°C world where climate impacts are severe, governments could still introduce strict regulations late in the game—perhaps in response to consecutive disasters (e.g., imposing a sudden carbon tax). Companies caught unprepared in such a situation would see their compliance risk spike dramatically. Thus, even in a low-policy environment, companies could still face penalties if sudden regulations are introduced.

11. Transition Risk: Changes in Market Structure

Sustainable Development Scenario (SDS)
In sustainable, globally transformative scenarios such as the International Energy Agency's Sustainable Development Scenario, renewable energy markets expand and diversify rapidly. In this scenario, customer expectations are significantly higher: beyond simple panel supply, additional demands emerge for digital energy management, carbon-neutral certification, and similar services. If Smart Solar Technologies' current business model cannot meet these demands, customers may turn to more innovative competitors. In the SDS scenario, many countries are expected to complete their

transition to electric vehicles in the 2030s, making the integration of solar energy with electric mobility critical.

Continuation of Current Policies Scenario (Middle Path)
This scenario envisions a world that follows neither a fully sustainable development path nor a completely neglected climate agenda, with current trends continuing only partially. Changes in market structure under this scenario may be moderate and gradual. For Smart Solar Technologies, the risk might appear more manageable but could be misleading: assuming that slow change eliminates the need for preparation could result in missing the sector's cumulative transformation. In the middle path scenario, the traditional grid-connected large-scale solar plant market may stagnate, while rooftop solar and microgrid markets could expand. If the company fails to anticipate this shift and adjust its portfolio accordingly, the sales market could shrink. Additionally, as sustainability becomes a stronger focus in customer satisfaction, not only service quality but also ethical and responsible marketing would gain importance. If this risk materializes, the customer base could gradually decline; companies unable to offer products that meet new-generation demands could see their market share diminish. The financial effect may not be immediately dramatic but could slow long-term growth.

No Policy/Hot Scenario (Market Disruption)
Even in a scenario where global climate action is weak, renewable energy markets could still grow due to technological progress and economic incentives, albeit with more volatility and regional disparities. In such a scenario, fossil fuels might maintain market share in some regions while renewable energy could dominate in others. For Smart Solar Technologies, this could mean developing excess capacity or unsuitable products in markets where expected changes do not occur—or, conversely, being unprepared for sudden demand spikes in unexpected regions. In a hot world, energy security issues (such as fossil fuel supply disruptions) could sharply increase demand for solar energy; if the company cannot scale up quickly at that moment, it could miss the opportunity.

12. Transition Risk: Collection Risk

Net Zero Emissions 2050 Scenario (NZ2050)
In an ambitious scenario where the world aims to achieve net-zero emissions by 2050, radical transformations occur across all sectors of the economy. For Smart Solar Technologies, if certain customers in its portfolio are negatively affected by the transition process, collection risk would increase. In the NZ2050 scenario, carbon prices would be high and technology transformation rapid; if customers fail to keep up with this change, their financial performance could weaken. For example, a manufacturing facility that loses competitiveness due to rising carbon costs might delay or default on payments for its solar panel investments. If this risk materializes in a scenario like NZ2050, it is possible that payment issues could occur with several major customers simultaneously, potentially creating a chain reaction severe enough to impact the company's own debt servicing ability.

Moderate Scenarios (Gradual Transition)
In more gradual or fragmented climate policy environments, collection risk would vary depending on the customer base. Some customers may be only slightly affected, while others could face serious risk. For instance, an agricultural enterprise with a solar power plant in a drought-prone region could experience revenue loss in the future, creating financial stress. In such cases, it may be necessary to require higher collateral (mortgages, bank guarantees, etc.) or apply different payment plans. In moderate scenarios, if economic stagnation coincides with climate transition costs, collection problems could become more widespread.

No Policy/Hot Scenario
In a world where climate action is weak, customers' climate policy–related costs might be low, suggesting a lower collection risk from this perspective. However, in a hot world, high physical risks and overall economic volatility would indirectly increase collection risk. A severe hurricane could negatively impact a regional economy, harming customers and causing payment delays. Moreover, the uncertainty brought by global warming could structurally weaken certain sectors. If customers in these sectors shrink or disappear in the long term, receivable collection would also be at risk. Therefore, the absence of policy-driven costs does not automatically guarantee customer stability; on the contrary, customers bearing the economic burden of physical climate impacts could face similar financial difficulties.

13. Chronic Physical Risk: Sea Level Rise and Flood Risk

Orderly Transition Scenario (Planned Adaptation World)
Even in a world aligned with the 1.5°C target, sea level rise cannot be completely stopped, though it can be relatively limited. In this scenario, because countries implement climate adaptation measures in a planned manner, the impacts of floods could be reduced through coastal protection structures, early warning systems, and similar measures. For Smart Solar Technologies, sea level rise risks would remain manageable in this scenario. Since risk analysis would already be part of site selection for production facilities, no major threat would be expected. If any site were determined to be at risk, preventive measures (such as building barriers, constructing levees, or strengthening drainage systems) would likely be taken in advance in an orderly transition scenario, limiting the impacts.

Disorderly Transition Scenario (Limited Adaptation)
In a scenario where climate policies are not fully implemented and adaptation measures are inadequate, sea level rise would continue to accelerate throughout the 21st century. From the 2050s onward, coastal regions could experience more frequent flooding. Heavy rainfall could also cause river flooding with significant damage. Disorderly transition may also indicate weak adaptation planning, meaning public infrastructure could be insufficient, forcing companies to fend for themselves. If this risk materializes, Smart Solar Technologies might not face a single catastrophic disaster but rather recurring operational disruptions throughout the year. While each individual incident could be manageable, cumulatively, maintenance and repair costs would increase, employee morale could decline, and small interruptions could cumulatively affect production targets. Financially, high-frequency small damages might not be covered by insurance (due to deductibles), resulting in reduced profitability.

Hot World Scenario (Insufficient Action – High Sea Level Rise Risks)
On a 3–4°C warming pathway, sea levels could rise by one meter or more by the end of the century. Such a change would effectively redraw the coastline. Some facilities that do not appear at risk today could find themselves in coastal zones within 30–50 years. In this scenario, the combination of sea level rise and extreme weather events would be especially dangerous: for example, a hurricane in 2070 could flood a much larger area due to elevated sea levels. For Smart Solar Technologies, if long-term planning is not done now, this could lead to radical measures such as relocating facilities in the future. While the hot world scenario might be perceived as a problem for future generations, strategic management should take this risk into account over the lifespan of its assets. Financially, the hot world scenario turns sea level rise into a serious investment risk.