APM SUSTAINABILITY

THE CENTRAL IDEA

Sustainability is not a separate public-relations exercise. In APM, it must influence strategy, targets, operations, decisions and performance reporting.

Syllabus map

Outcome	What the examiner expects	Verb	Core focus
A5(a)	Evaluate how sustainability affects strategic goals and how goals become objectives, policies and operations.	Evaluate	Strategy to action
A5(b)	Evaluate sustainability targets, measurement and performance reporting, including IR and the 3Ps.	Evaluate	Targets and reporting
A5(c)	Analyse conventional, hidden, contingent and reputational environmental costs and recommend action.	Analyse	Cost visibility
A5(d)	Evaluate lifecycle costing, input-output analysis and activity-based costing.	Evaluate	Technique suitability
A5(e)	Assess decisions using calculations, interpret results and recommend action.	Assess	Decision support

EXAM MINDSET

APM rewards applied judgement. A strong answer links the scenario evidence to a commercial or operational consequence and then reaches a proportionate conclusion.

PART 1

Sustainability and Strategic Goals

How environmental and social issues shape long-term direction and competitive choices.

1. What sustainability means in APM

Sustainability means managing the organisation so that it can create value over the long term without exhausting the environmental, social and economic resources on which it depends.

It is wider than environmental protection. It includes how the organisation treats employees and communities, uses natural resources, remains financially viable and responds to long-term risks and opportunities.

> **DO NOT REDUCE THE TOPIC TO "BEING GREEN"**
>
> In the exam, sustainability can influence demand, prices, operating costs, investment, access to finance, regulation, reputation, employee attraction, supply-chain resilience and the organisation's licence to operate.

2. Why sustainability changes strategy

Regulation and taxation: Carbon taxes, product standards, waste rules and reporting requirements can make existing products or processes more expensive.

Customers and markets: Customers may prefer lower-impact products or reject firms seen as irresponsible. Sustainability can support differentiation and new revenue.

Resources and supply chain: Scarce water, energy price volatility or vulnerable suppliers can threaten continuity and margins.

Technology and investment: Cleaner technology may require high initial investment but reduce lifecycle cost, risk and resource use.

Employees and society: Fair treatment, safety and purpose may affect recruitment, retention, productivity and stakeholder trust.

Finance and risk: Lenders and investors may consider climate exposure, governance and transition plans when pricing or providing capital.

3. From sustainability issue to operations

A strategic goal is broad. It becomes useful only when management translates it into objectives, policies and operational action.

Level	Purpose	Illustration: Sunrise Hotels
Strategic goal	Long-term direction	Become the lowest-impact hotel group in the region while maintaining profitable growth.
Business objective	Specific result	Reduce operational carbon intensity per occupied room by 40% from the 2025 baseline by 2030.
Policy	Rule or principle	New hotel investments must meet an approved energy-efficiency standard; suppliers must meet environmental criteria.
Operational action	Day-to-day change	Install smart controls, train staff, redesign laundry schedules, purchase renewable electricity and monitor usage by hotel.
Performance measure	Evidence of progress	kWh and kg CO2e per occupied room, total emissions, renewable electricity percentage and cost savings.

Worked illustration 1 - Sunrise Hotels

Sunrise Hotels operates 24 hotels in several major cities. Its electricity consumption and energy costs have increased during the last three years. An internal review found that several hotels use older air-conditioning and laundry equipment and consume more energy per occupied room than comparable hotels.

Large corporate customers, representing approximately 35% of Sunrise's room revenue, have started requesting information about the environmental performance of hotels used by their employees. Three cities in which Sunrise operates are also expected to introduce stricter building-efficiency requirements.

Management is considering investing in smart energy controls and more efficient laundry equipment. The investment would require significant capital expenditure and installation work could temporarily disrupt guests. Hotel managers are currently assessed mainly on operating profit, and responsibility for environmental performance has not been clearly assigned.

The board has proposed the following strategic goal:
"Sunrise Hotels will become greener."

Required:
Evaluate how the sustainability issues facing Sunrise should influence its strategic goal and recommend how the goal should be translated into appropriate business objectives, policies and operational actions.

(8 marks)

Model Answer — Sunrise Hotels

Sunrise's sustainability goal is strategically important because energy consumption affects several aspects of its long-term performance.

First, rising electricity consumption and energy prices will increase operating costs and reduce hotel profitability. Improving energy efficiency could therefore support both environmental performance and cost control.

Sustainability may also affect Sunrise's revenue. Corporate customers represent approximately 35% of room revenue and are requesting environmental information. If Sunrise cannot provide credible evidence of its performance, these customers may select competing hotels. Conversely, strong environmental performance could help Sunrise retain corporate customers and differentiate its services.

The expected introduction of stricter building-efficiency requirements creates a regulatory risk. Sunrise may eventually be required to replace inefficient equipment. Acting earlier could reduce the risk of penalties, rushed investment or disruption caused by future compliance requirements.

However, the proposed goal to "become greener" is too vague. It does not identify the environmental issue, baseline, target, deadline or responsible managers. It would therefore be difficult to use when making investment decisions or assessing performance. The strategic goal should also recognise that Sunrise must remain profitable and maintain service quality.

A more suitable strategic goal would be:

"To reduce the environmental impact of Sunrise's hotel operations while maintaining profitability, guest satisfaction and long-term competitiveness."

This should be translated into a measurable business objective. For example:

"Reduce electricity consumption per occupied room by an agreed percentage from an established baseline by 2030, while also reducing total electricity consumption and maintaining guest-satisfaction standards."

Both an intensity measure and an absolute measure are required. Electricity per occupied room allows comparisons between hotels and periods, while total electricity consumption prevents business growth from hiding an increase in Sunrise's overall environmental impact.

Sunrise should introduce policies requiring:

- new hotel equipment to satisfy approved energy-efficiency standards;
- major investments to be evaluated using financial and environmental criteria;
- regular measurement and reporting of hotel energy consumption;
- managers to have clear responsibility for environmental performance; and
- suppliers and contractors to meet appropriate environmental standards.

Operationally, Sunrise should perform detailed energy audits and prioritise hotels with the oldest equipment and greatest potential savings. It could pilot smart energy controls and efficient laundry equipment in a small number of hotels before wider implementation. Staff should also be trained to manage air-conditioning, lighting and laundry operations more efficiently.

Responsibility should be assigned to hotel managers and a senior executive. Relevant measures could include:

- electricity consumption per occupied room;
- total electricity consumption;
- energy cost per occupied room;

Hotel managers are currently assessed mainly on operating profit. This may encourage them to avoid investments that increase short-term costs, even where those investments provide long-term savings. Their performance assessment should therefore include a balanced combination of profit, energy efficiency and guest-satisfaction measures.

The investment will create trade-offs. Smart controls and efficient equipment require significant capital expenditure, while installation could temporarily disrupt guests and reduce room availability. Sunrise should therefore use lifecycle costing, pilot testing and phased implementation. Projects should be prioritised according to expected energy savings, financial return, regulatory urgency and effect on guests.

Overall, sustainability should influence Sunrise's strategic direction because it affects cost, customer retention, regulation and competitiveness. However, the current goal is inadequate. It should be replaced with a clear strategic goal supported by measurable objectives, investment and procurement policies, operational improvement plans, balanced performance measures and clearly assigned responsibility.

4. Strategic benefits and tensions

Benefit	Tension
Lower energy, water, material and waste costs.	Up-front capital cost and uncertain payback.
Stronger brand, customer loyalty and market access.	Risk of greenwashing if claims exceed evidence.
Lower regulatory, supply and reputational risk.	Compliance may slow decisions or reduce supplier choice.
Innovation and new products or business models.	Technology may be immature or become obsolete.
Employee engagement and easier recruitment.	Goals may conflict with short-term bonuses or workload.

EVALUATE = BALANCE + JUDGEMENT

Do not assume every sustainability project is automatically good. Compare long-term value and risk reduction with cost, feasibility, data quality, stakeholder effects and strategic fit.

PART 2

Objectives, Targets and Performance Reporting

How to design measures that support action rather than create attractive but misleading claims.

1. Building a sound sustainability objective

A good objective should identify the issue, metric, baseline, scope, target level, deadline and responsible owner. The objective should also be linked to strategy and controllable action.

> **TARGET DESIGN CHECK - SMART**
>
> Specific | Measurable | Attainable | Relevant | Time. If one of these is missing, performance may be difficult to interpret or manage.

2. Choosing the right measures

Type	Example	Strength	Limitation
Absolute measure	Total tonnes of CO2e or total water used	Shows total impact; important for environmental limits.	May rise when the business grows even if efficiency improves.
Intensity measure	CO2e per unit, kWh per occupied room	Supports comparison and operating control.	Can improve while total impact rises.
Leading indicator	% suppliers audited; staff trained	Signals actions likely to affect future results.	Activity may occur without improving outcomes.
Lagging indicator	Spills, emissions, injury rate	Shows actual outcome achieved.	May be reported too late to prevent harm.
Financial measure	Energy cost saved; environmental cost per unit	Connects sustainability to profit and decisions.	May ignore unpriced impacts and stakeholder harm.
Non-financial measure	Waste tonnes; employee turnover; safety incidents	Captures operational and social outcomes.	Requires reliable definitions and systems.

Worked Illustration 2 — Why One KPI Can Mislead

Sunrise Hotels has established the following sustainability objective:

"Reduce electricity consumption per occupied room by 25% from the 2025 baseline by 2030."

The following information has been extracted from Sunrise's performance reports:

	2025 baseline	2027 actual
Total electricity consumption	12.0 million kWh	12.6 million kWh
Occupied room nights	600,000	720,000

Management calculates that electricity consumption per occupied room has fallen and therefore intends to report that Sunrise's environmental performance has improved.

The proposed sustainability report will emphasise electricity consumption per occupied room. Management does not intend to report total electricity consumption because it believes the increase was caused by business growth and was therefore unavoidable.

Requirement

Calculate Sunrise's electricity consumption per occupied room for 2025 and 2027. Evaluate its electricity performance and the appropriateness of management's proposed reporting approach.

(6 marks)

Worked illustration 2 - Why one KPI can mislead

Year	Total energy	Occupied room nights	Energy per room night
2025 baseline	12.0m kWh	600,000	20.0 kWh
2027 actual	12.6m kWh	720,000	17.5 kWh
Change	+5.0%	+20.0%	-12.5%

Interpretation: energy intensity improved by 12.5%, suggesting better operating efficiency. However, total energy consumption increased by 5% because activity grew. Reporting only the intensity measure could create an incomplete impression of the total environmental impact.

Recommendation: report both absolute and intensity measures, explain the effect of business growth, and show progress against the 2030 pathway.

3. Setting target levels

A target should be challenging enough to change behaviour but realistic enough to remain credible. Management should consider:

1. the baseline and historical rate of improvement;
2. external regulation, scientific thresholds or stakeholder expectations;
3. benchmarks and best practice, adjusted for differences in context;

A target that is too easy creates little improvement. A target that is unrealistic may demotivate managers, encourage manipulation or divert resources from more valuable action.

4. Responsibility and incentives

Targets should be cascaded only to managers who can influence the result. For example, a factory manager may control energy efficiency and waste yield, while procurement controls supplier standards and product designers influence material choice.

Reward systems should use a balanced set of measures. If bonuses depend only on profit, managers may defer environmental investment. If they depend only on a single sustainability KPI, managers may game that measure or sacrifice quality and service.

> **CONTROL PRINCIPLE**
>
> Measure performance at the level where action occurs, but retain organisation-wide measures so local improvement does not merely shift harm to another department, supplier or stage of the lifecycle.

5. The 3Ps - People, Planet and Profit

P	Focus	Possible measures
People	Employees, customers, suppliers and communities	Injury rate, employee turnover, fair-pay coverage, customer safety, community impact
Planet	Natural resources and environmental effects	GHG emissions, water withdrawal, waste, biodiversity impact, renewable energy
Profit	Economic viability and value creation	Revenue, margin, cash flow, return on investment, environmental cost savings

The 3Ps broaden performance assessment beyond short-term financial profit. They also expose trade-offs. For example, closing a polluting facility may help Planet but harm People through job losses and may initially reduce Profit. A good evaluation considers transition support, investment alternatives and long-term effects rather than treating one P as automatically dominant.

6. Integrated reporting (IR)

Integrated reporting explains how an organisation's strategy, governance, performance and prospects lead to value creation, preservation or erosion over the short, medium and long term. It connects financial and non-financial information rather than presenting sustainability as an isolated report.

The six capitals

Capital	Simple meaning
Financial	Funds available for use
Manufactured	Buildings, equipment and infrastructure
Intellectual	Knowledge, systems, brands and intellectual property
Human	Skills, experience, motivation and wellbeing
Social and relationship	Trust, networks, stakeholder relationships and licence to operate
Natural	Energy, water, land, biodiversity and other environmental resources

Why IR is useful

1. It encourages integrated thinking: managers consider connections between departments, time horizons and capitals.
2. It helps investors and other users understand the business model and the factors affecting future value.
3. It can reveal trade-offs, such as using financial capital to improve natural and manufactured capital.

Limitations and risks

1. Some impacts are difficult to measure or compare, and different capitals cannot always be reduced to one number.
2. Management may select favourable indicators, use vague narratives or avoid negative information.
3. Preparing reliable connected information can be costly and may require new systems, controls and assurance.
4. Too much information can obscure the matters that are genuinely material.

EXAM APPLICATION

Do not merely list the six capitals. Explain which capitals the organisation uses or affects, how the business model changes them, and why that matters to future value and stakeholder decisions.

PART 3

Environmental Cost Categories

Making costs visible before analysing performance or recommending action.

1. Why environmental costs are often underestimated

Traditional accounting systems often place environmental costs inside general overheads. Managers may see the cost of waste disposal but overlook the wasted raw material, energy, labour, compliance effort, future clean-up exposure and reputational effect that caused it.

If the costs are hidden or allocated inaccurately, product cost, pricing, investment and product-mix decisions may be distorted.

2. The four categories

Category	Meaning	Examples
Conventional	Normal costs with environmental relevance	Raw materials, energy, water, equipment and disposal charges
Hidden	Costs recorded but lost inside overheads or incurred before/after production	Permits, monitoring, reporting, staff time, training and compliance administration
Contingent	Possible future costs dependent on uncertain events	Clean-up, restoration, litigation, penalties and compensation
Reputational	Image and relationship effects, often difficult to quantify	Lost sales, boycott, tender failure, investor concern, community opposition and brand rebuilding

MEMORY AID - CHCR

Conventional | Hidden | Contingent | Reputational. Ask: What do we pay now? What is buried? What might arise later? What could trust damage cost?

Worked illustration 3 - GreenChem

GreenChem is reviewing the annual environmental costs of one production line. The following information has been identified:

Item	Decision-use amount	Category
Raw materials with environmental relevance	$840,000	Conventional
Energy and water	$210,000	Conventional
Permits and monitoring	$75,000	Hidden
Environmental training and reporting	$45,000	Hidden

Item	Decision-use amount	Category
Waste-handling administration in factory overhead	$30,000	Hidden
20% chance of $1.5m site clean-up	$300,000 expected value	Contingent
30% chance of $200,000 regulatory penalty	$60,000 expected value	Contingent
Estimated lost contribution if a customer tender is rejected	$400,000	Reputational

Visible conventional cost is $1,050,000. Identified hidden cost is $150,000. Probability-weighted contingent exposure is $360,000. The possible reputational loss is $400,000. The wider decision-use cost is therefore potentially far above the amount likely to appear as a separately labelled "environmental cost" in the accounting system.

Interpretation and action

1. The conventional costs are the largest current cash cost, so material and energy efficiency should receive attention.
2. Hidden costs should be removed from general overhead and traced to the processes that cause them. This improves accountability and product costing.
3. Expected values help compare uncertain exposures for internal decisions, but they do not automatically determine the amount recognised in financial statements.
4. The tender loss shows that environmental performance can affect revenue and relationships, not only cost.
5. GreenChem should investigate source reduction, strengthen controls, maintain a contingency response plan and report exposure ranges rather than rely on one uncertain estimate.

PART 4

Environmental Management Accounting (EMA)

Using physical and monetary information to improve internal decisions and environmental performance.

1. What EMA does

Environmental management accounting identifies, collects and analyses both physical information and monetary information for internal decision-making.

Information type	Examples
Physical information	Quantities and flows of materials, water, energy, products, by-products, waste and emissions
Monetary information	Environment-related costs, revenues, savings, investments and potential exposures

EMA supports product pricing, budgeting, investment appraisal, process improvement, target setting and performance control. Its value comes from connecting physical waste to financial consequences.

2. Selecting an EMA technique

Technique	Management question	Best use
Lifecycle costing	What will the product or asset cost and earn over its entire life?	Long-term product design, pricing, investment and end-of-life decisions
Input-output analysis	Where are materials, water or energy being lost?	Process yield, waste identification and resource efficiency
Activity-based costing	Which activities, products or customers cause environmental overhead?	More accurate allocation, pricing, product mix and process redesign

TECHNIQUE 1

Lifecycle Costing

A cradle-to-grave view of cost, revenue and environmental consequences.

1. Core principle

Lifecycle costing accumulates the costs and revenues of a product, service or asset over its entire life rather than assessing only one accounting period or the manufacturing stage.

Simple formula: **Lifecycle profit = total lifetime revenue - total lifetime cost**

Relevant stages may include research and design, supplier selection, production, packaging, distribution, customer use, warranty, take-back, recycling, restoration and disposal.

2. Why it matters for sustainability

1. Many environmental costs are committed during design, even though cash is paid later.
2. A cheaper manufacturing method may create higher energy, warranty or disposal costs later.
3. The technique encourages prevention and design changes before costs become locked in.
4. It supports pricing and investment decisions that recover all relevant lifetime costs.

Worked illustration 4 - EcoChill appliance

EcoChill expects to sell 40,000 appliances at $92 each. Estimated lifecycle costs are:

Lifecycle item	Amount
Research and eco-design	$450,000
Tooling and production set-up	$300,000
Launch marketing	$200,000
Manufacturing: $38 x 40,000	$1,520,000
Packaging: $4 x 40,000	$160,000
Distribution: $3.50 x 40,000	$140,000
Expected warranty and returns	$90,000
Take-back and recycling: $6 x 40,000	$240,000
Tooling decommissioning	$80,000
Total lifecycle cost	$3,180,000

Lifetime revenue: $92 x 40,000 = $3,680,000

Lifecycle profit: **$3,680,000 - $3,180,000 = $500,000**

Profit per unit: $500,000 / 40,000 = $12.50

Design alternative

A redesign would increase research cost by $120,000 but reduce manufacturing cost by $1.50 per unit, packaging by $1 per unit and take-back cost by $3 per unit.

Effect	Amount
Extra research cost	$(120,000)
Manufacturing saving: $1.50 x 40,000	$60,000
Packaging saving: $1.00 x 40,000	$40,000
Take-back saving: $3.00 x 40,000	$120,000
Net lifecycle saving	$100,000

The redesign increases expected lifecycle profit from $500,000 to $600,000. It also uses less packaging and lowers end-of-life cost. On the available information, it is financially and environmentally preferable.

However, management should test sales volume, implementation timing, product quality, customer willingness to pay and the reliability of future take-back estimates before approval.

3. Evaluation of lifecycle costing

Strengths	Limitations
Provides a long-term view and exposes costs outside production.	Future volume, price, technology and disposal costs may be uncertain.
Encourages early design changes, when cost reduction is easier.	Data may cross departments and organisations and be costly to collect.
Supports full-cost pricing and product profitability analysis.	Allocating shared research, brand and infrastructure costs may be subjective.
Connects environmental effects with commercial decisions.	A purely monetary model may still omit impacts that cannot be priced reliably.

TECHNIQUE 2

Input-Output Analysis

Balancing physical inputs with useful output, by-products, scrap, waste and emissions.

1. Core principle

Mass-balance rule: Input = useful output + other output + waste

Everything entering the process must leave, remain in inventory or be otherwise accounted for. The analysis makes losses visible in physical units first and then attaches monetary values.

2. Method

1. Define the process and measurement period.
2. Measure all material, water and energy inputs.
3. Measure saleable output, by-products, scrap, emissions and waste.
4. Reconcile the physical balance and investigate unexplained losses.
5. Value the lost input, processing already incurred, disposal cost and any recoverable value.
6. Target the operational cause of waste and monitor the revised yield.

Worked illustration 5 - Material yield

A process uses 12,000 kg of material costing $5 per kg. It produces 9,000 kg of good output, 1,800 kg of saleable scrap and 1,200 kg of waste requiring disposal at $1.50 per kg. Scrap sells for $0.80 per kg.

Flow	Quantity	% of input
Material input	12,000 kg	100.0%
Good output	9,000 kg	75.0%
Saleable scrap	1,800 kg	15.0%
Waste	1,200 kg	10.0%
Total accounted output	12,000 kg	100.0%

Raw material cost contained in waste: 1,200 kg x $5 = $6,000

Waste disposal cost: 1,200 kg x $1.50 = $1,800

Visible cost of waste: $6,000 + $1,800 = $7,800

Scrap revenue: 1,800 kg x $0.80 = $1,440

If process improvement converts 600 kg of waste into good output sold for $9 per kg, annual benefit is $5,400 additional revenue plus $900 avoided disposal cost, before any additional processing or investment cost.

Interpretation

1. The 75% good-output yield means one quarter of input does not become the intended product. Scrap revenue recovers only a small part of the original material cost.
2. The true cost of waste may exceed $7,800 because wasted labour, energy and machine time have not yet been included.
3. Management should investigate causes such as specification, machine settings, supplier quality, handling and staff practice rather than merely negotiating a cheaper disposal contract.

3. Evaluation of input-output analysis

Assessment	Point
Strength	Makes physical waste visible and supports yield improvement.
Strength	Simple mass-balance logic can expose data gaps and operational loss.
Strength	Links resource efficiency to cost reduction and environmental impact.
Limitation	Accurate measurement may be difficult where flows are complex, mixed or continuous.
Limitation	The technique identifies where loss occurs but may not explain its root cause.
Limitation	It focuses mainly on physical flows and needs monetary analysis for decisions.

TECHNIQUE 3

Activity-Based Costing (ABC)

Tracing environmental overhead to the activities and cost objects that cause it.

1. Core principle

ABC collects overhead in activity cost pools and allocates it using cost drivers that reflect consumption of the activity. In an environmental context, this can reveal which products, processes, sites or customers cause waste treatment, inspections, emissions monitoring or recycling activity.

Cost-driver rate = activity cost pool / total driver volume

Cost allocated = cost-driver rate x driver units used

2. Environment-related and environment-driven costs

1. Environment-related costs may be collected in identifiable environmental cost centres, such as a waste-treatment plant.
2. Environment-driven costs are caused by environmental effects but are often hidden within general overhead, such as extra inspections, documentation or handling caused by a hazardous product.

Worked illustration 6 - Product cost distortion

A manufacturer has two environmental activity pools: waste treatment of $360,000 driven by kilograms of hazardous waste, and environmental inspection of $240,000 driven by number of inspections.

Cost pool	Cost	Driver volume	Driver rate
Waste treatment	$360,000	120,000 kg	$3 per kg
Environmental inspection	$240,000	200 inspections	$1,200 per inspection

Product	Units	Waste	Inspections	ABC environmental cost	Cost per unit
Product P - solvent based	50,000	90,000 kg	120	$414,000	$8.28
Product W - water based	150,000	30,000 kg	80	$186,000	$1.24

If the $600,000 environmental overhead were allocated by unit volume, Product P would receive only $150,000 ($3 per unit) and Product W would receive $450,000 ($3 per unit). ABC instead assigns $414,000 to P and $186,000 to W because P causes more hazardous waste and inspections.

Interpretation and recommendation

1. Traditional allocation cross-subsidises Product P: its environmental cost is understated by $264,000, while Product W is overstated by the same amount.
2. Management may be underpricing P and making the cleaner W appear less profitable than it is.
3. The result supports redesign, process improvement, revised pricing or customer discussion for P. Discontinuation should not be automatic; contribution, demand, strategic importance and avoidability of costs must also be assessed.

3. Evaluation of environmental ABC

Strengths	Limitations
More accurate product and customer costs when activities differ.	Driver identification and data collection may be complex and costly.
Makes environmental activities visible to responsible managers.	Drivers show correlation and may not perfectly represent causation.
Supports pricing, product mix and process redesign.	Some facility-sustaining costs remain difficult or arbitrary to allocate.
Discourages cleaner products from subsidising polluting products.	The model requires regular updating as processes and costs change.

SUITABILITY JUDGEMENT

ABC is most valuable when environmental overhead is material, products consume environmental activities very differently, and suitable cost drivers can be measured reliably.