



DATA PLAN

1 Background

The University of Energy and Natural Resources, Sunyani, Ghana, was established by an Act of Parliament, Act 830, in 2011 to provide human resource needs in the energy and natural resource sectors. The University seeks to provide leadership and management of energy and natural resources and to be a centre of excellence in these critical areas. The motto of the University is "Knowledge Integrity Impact".

The University provides an environment for excellent training of students by faculty who are committed to problem-solving, active in community partnership, and approach their work with integrity. All these activities generate data, which is a strategic asset of a Higher Educational Institution (HEI) to understand its operations, students and other clients who access its services. This understanding enables a HEI to develop and deploy innovative methods to enhance its student recruitment, student outcomes, institutional efficiency and cost-containment. The trust of this document is to provide a data plan for the University of Energy and Natural Resources (UENR)..

VISION: To become a data-driven world-class institution for generating, advancing and applying knowledge in energy and natural resource sciences.

MISSION: To adopt evidence-based decision-making methodologies to promote the development of human resources and skills required to solve critical energy and natural resource challenges of society and undertake interdisciplinary academic research and outreach programmes in engineering, science, economics and environmental policy.

MANDATE: To provide data-driven leadership in science, technology and management of energy and natural resources and be a centre of excellence in these critical areas. Leveraging on data literate support staff, and data-oriented applications and technologies, the University will approach its programmes and research by emphasising interdisciplinary collaboration and taking into account areas such as economics, law and policy, management, science, technology, engineering, social and political issues affecting energy and natural resources.

2 Purpose of the Data Plan and its Importance to the University

The purpose of this Data Plan is to provide a structured approach to data collection, management, and analysis at UENR, with the goal of improving decision-making, promoting transparency and accountability, and ensuring compliance with data protection laws and regulations. The Plan is to use data to support the University to achieve its strategic objectives as identified in the Strategic Plan (Section 3.3 of UENR Strategic plan). The main aim of this plan is to provide a blueprint for the University to aid its effort at using data strategically to inform its programmes and major initiatives, performance management, resources allocation and budgeting. The Data Plan seeks to provide a common language and framework for the University to:

- a. Prioritise and organise its programmes and initiatives;

- b. Use data and its analysis to set goals for programmes and major initiatives;
- c. Make data available and encourage its utilisation to manage programmes and inform decision-making;
- d. Use data to understand, manage, and monitor current programme operations;
- e. Use data and its analysis to set goals for performance management;
- f. Use data and its analysis to review and adjust budget, staff, accommodation and other resource allocations.

3 Objectives

The aim of the Data Plan is to use data and its analysis to support the achievement of the strategic objectives in the University's Strategic Plan. The objectives of the Data Plan of the University are to

- i. Ensure the availability of critical human resources with the requisite skills in data use;
- ii. Develop and promote data use culture;
- iii. Improve ICT infrastructure and technologies to support the University's data use agenda;
- iv. Develop data use systems to support the University's
 - a. Enrolment management
 - b. Finance and budget
 - c. Student progress

4 Plan Period

The plan period of the Data Plan is 10 years, stretching from 2023 to 2033.

Short Term 2023/2024-2025/2026 (Three Academic Years)

Medium Term 2026/2027-2028/2029 (Three Academic Years)

Long Term 2029/2030-2032/2033 (Four Academic Years)

5 Data Access

Data access refers to the ability of authorised individuals to view, retrieve, modify, or use information stored in the institution's databases or other information systems. This is done for various reasons, including protecting the privacy of individuals whose personal information is stored in the institution's systems, ensuring the security of the institution's intellectual property, and complying with various legal and regulatory requirements.

6 Data Integration

Data integration refers to the process of bringing together data from various systems and databases within the institution to provide a comprehensive view of the institution's operations, students, faculty, staff, and other stakeholders.

7 SWOT Analysis

The SWOT analysis presents the strengths, weaknesses, opportunities and threats of the University of Energy and Natural Resources.

| Strengths | Opportunities |
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| Strengths are the positive internal attributes of the University of Energy and Natural Resources that are within its control. | Opportunities are external factors in the environment that have the potential to contribute to the success of the University. |
| <ul style="list-style-type: none"> • IT team to support the part of the plan that concerns technology. • Staff from the RCEES, Human Resource Division, Quality Assurance and Academic Planning Directorate and Centre for Professional Development who will support the implementation of the data plan. • The Vice-Chancellor's keen interest in ensuring that UENR becomes a data-driven institution. • Silos of existing data situated at the different units of the University since its establishment in 2011/2012. • There have been pockets of the use of some of these data to inform decision making. | <ul style="list-style-type: none"> • Attracting more students, faculty, and funding opportunities for the University. • Collaborations with National and International institutions. • The Data Plan will enable the University to provide timely data to national and international institutional regulatory bodies. • The requirements of these regulatory bodies will provide the University with the foundation to build its data framework. |
| Weakness/Challenges | Threats |
| Weaknesses refer to the negative factors that detract from the strengths. They are things that the University of Energy and Natural Resources needs to improve on to achieve results | Threats refer to external factors outside the control of the University of Energy and Natural Resources |

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| <ul style="list-style-type: none"> • The implementation of the Data Plan will require significant investment in terms of time, resources, and funding. • Limited data literacy skills among staff of the University. • Lack of clear-cut roles for personnel involved in data collection and management. • Difficulty in accessing reliable data. • Data security challenges. • Lack of policies on data use. • Poor recruitment and retention of competent staff for the implementation and management of the data plan. | <ul style="list-style-type: none"> • Changes in data protection laws • High cost of technological updates • The implementation of the Data Plan may not result in immediate or tangible benefits, which could affect support for the plan over time. • Potential distortion and loss of data that could result from integration of existing pockets of data. • Loss of key staff to other institutions. • Resistance to change. |
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8 Data Sources

Data will be collected from the broad thematic areas of

- i. Student Data
- ii. Teaching and Research Data
- iii. Financial Data
- iv. Administrative data
- v. Quality Assurance
- vi. Sports and extracurricular activities

I. Thematic Area 1: Students Data

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|--|---|-----------|--------------------|--|
| Student demographics (age, gender, race/ethnicity, etc.) | Academic and Student Affairs (ASA) and School of Graduate Studies | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|---|---|----------------|--------------------|--|
| Enrollment data (number of students, application rates, acceptance rates, admission campaigns etc.) | Academic and Student Affairs (ASA) and School of Graduate Studies | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Academic performance data (GPA, grades, class rank, graduation, dropout, etc.) | Deans of Schools | Every semester | Starting from 2026 | All faculty: Partial access Management: Full access |
| Student behaviour data (disciplinary actions, attendance, etc.) | Academic and Students Affairs and Dean of Students | Every semester | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Student survey data (satisfaction, exit surveys etc.) | QAAPD | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Student support data (counselling, health, etc.) | Dean of Student and Director of University Health Services | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Student financial data (tuition, fees, scholarships, etc.), | Director of Finance | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Alumni Tracer study, | QAAPD | Every 3 years | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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| Accommodation | Dean of Students | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Student exchange programmes and joint programmes (MoUs) | | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

II. Thematic Area 2: Quality Assurance

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|--|---------------------------------|-----------|--------------------|--|
| Accreditation of programmes (No of programmes with valid accreditation, programmes under accreditation or reaccreditation, etc.) | QAAPD | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| University policies and guidelines | Registrar/ QAAPD | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Physical infrastructure (lecture rooms, offices, hostels, recreational facilities). | Estate Organisation / QAAPD | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Schools, Institutes, Centres, Departments, Directorates, etc | QAAPD / Deans /HODs / Directors | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|--|--------------|----------------|--------------------|--|
| Students' assessment of courses and lectures | QAAPD | Every semester | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
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III. Thematic Area 3: Sports and Extracurricular Activities

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|---|---|-----------|--------------------|--|
| Campus clubs and associations, Recreational services | Sports Directorate, Dean of Students, University Chaplaincy | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Games (Football, volley, tennis, track and field, etc.) | Sports Directorate, Dean of Students, University Chaplaincy | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Student career services | Industrial Attachment / Centre for Student Skills Enhancement | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

IV. Thematic Area 4: Teaching and Research Data

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|---|---|-----------|--------------------|--|
| Research proposals and grants data (funding agencies, amount of funding, timelines, etc.) | Centre for Grants and Research Innovation (CeGRI) | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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| Research outputs data (publications, presentations, patents, etc.) | CeGRI | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Research collaboration data (partnerships, joint publications, shared data, etc.) | CeGRI and International Relations Office (IRO) | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Research impact data (citations, media coverage, societal benefits, etc.) | CeGRI and University Relations Office (URO) | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Research compliance data (ethical approval, data protection, animal welfare, etc.) | University Ethics Committee | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| IT service desk management | IT Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Learning management | IT Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Promotions and awards | HR Division | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|---|---------------------------|----------|--------------------|--|
| Library (reference books availability, students usage of library etc) | University Library | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Equipment for teaching and learning | Deans | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Consultancy services | CeGRI | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

V. Thematic Area 5: Financial Data

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|---|------------------------------|------------------|--------------------|--|
| Budget data (income, expenses, projections, etc.) | Finance Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Accounting data (revenues, expenditures, accounts payable, accounts receivable, etc.) | Finance Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Financial aid data (grants, loans, scholarships, etc.) | Finance Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|--|-------------------------|----------|--------------------|--|
| Procurement data (vendor contracts, purchase orders, invoices, etc.) | Procurement Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Endowment data (investments, earnings, distributions, fundraising.) | Finance Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Sponsorships | Finance Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

VI. Thematic Area 6 - Administrative Data

| Data Type | Responsible Personnel | Frequency | Integration | Access |
|--|------------------------------------|-----------|--------------------|--|
| Human resources data (employee demographics, hiring, promotions, benefits, etc.) | HR Division | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| IT data (infrastructure, software, hardware, helpdesk tickets, etc.) | IT Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Facilities data (building usage, maintenance, repairs, space allocation, etc.) | Estate Organisation / Exams Office | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|--|-------------------------------------|----------------|--------------------|--|
| Marketing data (advertising, media relations, branding, etc.) | University Relations Office | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Compliance data (policies, regulations, standards, audits, etc.) | Internal Audit / QAAPD | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Lecture room scheduling | Examinations Office | Every semester | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Training and development | Human Resources Division | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Office accommodation for staff | Estate Organisation | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Housing | Estate Organisation | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Office Equipment | Estate Organisation/ IT Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

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|----------------------------------|--|----------|--------------------|--|
| Security | Security Services | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |
| Welfare (cafeteria, health, etc) | Cafeteria /University Health Directorate | Annually | Starting from 2026 | All faculty and staff: Partial access Management: Full access |

9 Data Use Progression

To become a data driven institution the University's data use is to progress along the following levels:

a. Descriptive Data Use

Analysis is done to provide a perception of what happened and the results are primarily used for compliance purposes. This analysis classifies the subjects/items according to characteristics.

b. Diagnostic Data Use

At this phase, data is analysed to gain an accurate and deep understanding of the cause of what has happened. This analysis can help identify factors/characteristics correlated with the observable interest for self-study purposes by the University.

c. Predictive Data Use

Data analysis is aimed at constructing a model based on past data and selected characteristics of the observable of interest to predict future values of the observable. This analysis provides information about what is to be expected or what will be needed in the future to support planning and decision-making.

d. Prescriptive Data Use

The outcomes of the predictive data analysis are used to determine actions the institution could take to influence behaviour to produce the desired future outcome. At the level, possible interventions are deployed to solve the problem at hand.

e. Evaluative Data Use

This final stage of data use measures the effectiveness of interventions deployed to solve problems.

10 Performance Indicators

The Data Plan shall be monitored and evaluated with the help of the benchmarks outlined in the tables below.

i. Objective 1 – To ensure the availability of critical human resources with the requisite skills in data use.

| Key Action | Responsibility | Target | Time frame | Monitoring Indicators | Expected results |
|---|-----------------------|--------------|------------|---|--|
| Creation of data team(s) with clear-cut roles | Vice Chancellor | All campuses | 2023/2024 | Inauguration of data team | Functional data team(s) with clear-cut roles |
| Recruitment of staff with requisite skills | Vice Chancellor | All campuses | 2023-2033 | Number of staff with requisite skills recruited | New staff recruited |
| Training and development | HR Division and QAAPD | All campuses | 2023-2033 | Number of training programmes | Improved staff capacity on data use |

ii. Objective 2 - Develop and promote data use culture

| Key Action | Responsibility | Target | Time frame | Monitoring Indicators | Expected results |
|--|-----------------|--------------|------------|--|--|
| Development of data policy | Vice Chancellor | All campuses | 2023/2024 | Data policy document | Data policy document |
| Collection, processing and storage of quality data | Data team(s) | All campuses | 2023-2033 | Completeness of data Accuracy of data Availability of data | Complete data Quality data Accessible data |
| Creation of awareness of availability of data to aid decision making | HR / QAAPD | All campuses | 2023-2033 | Number of training programmes, notices, etc | Well informed staff on data support |

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|---|-----------------------|--------------|-----------|--|--|
| Management's promotion of data-driven decision making | University Management | All campuses | 2023-2033 | Number of decisions on enrolment, finance and budget, student progress influenced by data. | Management practising evidence-based decision-making |
|---|-----------------------|--------------|-----------|--|--|

iii. Objective 3 – To improve ICT infrastructure and technologies to support the University's data use agenda

| Key Action | Responsibility | Target | Time frame | Monitoring Indicators | Expected results |
|---|-----------------------|---------------|-------------------|---|---|
| Provision of data storage infrastructure | Vice Chancellor | All campuses | 2023-2026 | Computers, servers, storage systems | Up-to-date data storage infrastructure |
| Provision of a data management system (collection, processing and transmission) | Vice Chancellor | All campuses | 2023-2026 | A functional data management system | Up-to-date data management system |
| Acquisition of data analysis tools and technologies | Vice Chancellor | All campuses | 2023-2026 | Functional data analysis tools and technologies | Up-to-date data analysis tools and technologies |

iv. Objective 4 – To develop data use systems to support the University's enrolment management, finance and budget and student progress

| Key Action | Responsibility | Target | Time frame | Monitoring Indicators | Expected results |
|--|-----------------------|---------------|-------------------|------------------------------|-------------------------|
| Develop data use systems to support the University's enrollment management, finance and budget and student | | All campuses | | | |

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|--|---------------------------------|--|-----------|---|---|
| <p>progress at the following levels: i. Descriptive level</p> | | | | | |
| <p>ii. Diagnostic level</p> | QAAPD, Finance Directorate, ASA | | 2023-2026 | Reports with descriptive analysis of data | Use of the reports to support decision making |
| <p>iii. Predictive and prescriptive level</p> | QAAPD | | 2026-2029 | Reports with diagnostic analysis of data | Use of the reports to support decision making |
| | QAAPD | | 2029-2033 | Reports with predictive and prescriptive analysis of data | Use of the reports to support decision making |

11 Budget

To be drawn by a committee