<table>
<tr><th>THE 填報的問題</th><th>架構</th><th>項目</th><th>說明</th><th>回覆資料彙整</th><th>English Responses</th></tr>
<tr>
<td>13.4.1 - Does your university as a body have a target date by which it will become carbon neutral according to the Greenhouse Gas Protocols?</td>
<td>SDG13 氣候行動</td>
<td>實現碳中和大學的承諾</td>
<td>根據溫室氣體核算體系，設定成為碳中和大學的目標日期</td>
<td>● 量化資料：

● 質化資料

● 相關法規及佐證資料
本校設定 2030 碳中和目標達 50%
本校設定 2050 碳中和目標達 100%</td>
<td>・Qualitative data

scope 1, scope 1 and 2, scope 1, 2, and 3(partial)
・Quantitative data

・Relevant regulations and proving data
NUU plans to be 50% carbon neutral by 2030, and 100% by 2050.
https://drive.google.com/drive/folders/15RpsLzKfxqUAce16neMf2l1OafUt9bOS</td>
</tr>
<tr>
<td>13.2.2.1 - Total energy used</td>
<td>SDG13 氣候行動</td>
<td>能耗總量
Total energy used 39,871GJ</td>
<td>以吉焦 (GJ) 計算的能耗總量</td>
<td>● 量化資料：
本校 2019 與 2020 年之用電量統計資料如下:
<table>
<tr><td>年度</td><td>2019</td><td>2020</td></tr>
<tr><td>總用電量 (kWh)</td><td>11,124,800</td><td>11,255,000</td></tr>
<tr><td>總用電量(GJ)</td><td>40,049.28</td><td>40,518.00</td></tr>
</table>
1 度電 = 千瓦時 [kWh] = 0.0036 吉焦 [GJ]
● 質化資料

● 相關法規及佐證資料</td>
<td>・Qualitative data
Annual electricity consumption in NUU in 2019 and 2020:
<table>
<tr><td>Year</td><td>2019</td><td>2020</td></tr>
<tr><td>Total electricity consumption (kWh)</td><td>11,124,800</td><td>11,255,000</td></tr>
<tr><td>Total electricity consumption (GJ)</td><td>40,049.28</td><td>40,518.00</td></tr>
</table>
1 kWh= 0.0036 GJ

・Quantitative data</td>
</tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td>・Relevant regulations and proving data</td></tr>
<tr><td>13.2.2.2 - Total energy used from low-carbon sources</td><td>SDG13 氣候行動</td><td>低碳能耗量
Total energy used from low-carbon sources 16,152GJ</td><td>以吉焦(GJ)計算的低碳能耗總量
*低碳能源：可再生能源(生物質、水電、地熱)、發電來源(風、太陽能、核能)、可再生電力</td><td>● 量化資料：
本校2019與2020年之用電量統計資料如下:
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<tr><td>年度</td><td>2019</td><td>2020</td></tr>
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<tr><td>總用電量(GJ)</td><td>40,049.28</td><td>40,518.00</td></tr>
<tr><td>本校太陽能發電量(kWh)</td><td>3,459,631</td><td>3,717,068</td></tr>
<tr><td>本校太陽能發電量(GJ)</td><td>12,454.67</td><td>13,381.44</td></tr>
<tr><td>外購電量(kWh)</td><td>7,665,169</td><td>7,537,932</td></tr>
<tr><td>外購電量(GJ)</td><td>27,594.61</td><td>27,136.56</td></tr>
</table>
1度電 = 千瓦時 [kWh] = 0.0036 吉焦 [GJ]
● 質化資料
● 相關法規及佐證資料</td><td>・Qualitative data
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<tr><td>Total electricity consumption (GJ</td><td>40,049.28</td><td>40,518.00</td></tr>
<tr><td>Solar energy generated in NUU (kWh)</td><td>3,459,631</td><td>3,717,068</td></tr>
<tr><td>Solar energy generated in NUU (GJ)</td><td>12,454.67</td><td>13,381.44</td></tr>
<tr><td>Purchased electricity (kWh)</td><td>7,665,169</td><td>7,537,932</td></tr>
<tr><td>Purchased electricity (GJ)</td><td>27,594.61</td><td>27,136.56</td></tr>
</table>
1 kWh= 0.0036 GJ
・Quantitative data
・Relevant regulations and proving data</td></tr>
</table>

				本校 2019 與 2020 年之用電量統計資料如下: 年度 | 2019 | 2020 總用電量(kWh) | 11,124,800 | 11,255,000 總用電量(GJ) | 40,049.28 | 40,518.00 本校太陽能發電量(kWh) | 3,459,631 | 3,717,068 本校太陽能發電量(GJ) | 12,454.67 | 13,381.44 外購電量(kWh) | 7,665,169 | 7,537,932 外購電量(GJ) | 27,594.61 | 27,136.56 外購綠電量(GJ) | 3,697.68 | 3,446.34 總綠電量(GJ) | 16,152.35 | 16,827.78 1 度電 = 千瓦時 [kWh] = 0.0036 吉焦 [GJ] 2019、2020 台灣核電佔比 13.4、12.7%，故外購電量由核電(綠電)來的電量= 27,594.61*13.4%=3,697.68 GJ 及 27,136.56*12.7%=3,446.34 GJ.	
13.3.1 - Does your university as a body provide local education programmes or campaigns on climate change risks, impacts, mitigation, adaptation, impact reduction and early warning?	SDG13 氣候行動	氣候主題的地方教育項目	提供關於氣候變化風險、影響、減緩、適應、減少影響和預警的地方教育項目或宣傳活動	● 量化資料： ● 質化資料 ✓ 109 年 4 月 23 日（星期四）華語文學系何照清老師接受本校通識課程「幸福人生的秘密」之邀請為修課學生談護生蔬食可幫助飢荒糧食不足的人類，也可減緩暖化及氣候變遷等問題。 ✓ 109 年 12 月 11 日（星期五）華語文學系何照清老師接受中國醫藥大學邀請演講：「吃出健康—餐桌上的祕密」」吃出健康—餐桌上的祕密。從手中的這份便當談起，餐桌上有哪些不為人知秘密？古德說「民以食為天」,「吃」，對人的一生影響極大，但是「吃」這件事並不簡單，需要更用心。「病從口入」，許多病是因為自己的無知而吃出來的；為了免於生病，讓我們來探索餐桌上有哪些秘密？從食	• Qualitative data Yes • Quantitative data ✓ On April 23 2010 and April 22 2011, lectures were held to students about vegetarianism, which may reduce global warming. ✓ During July and August 2011, NUU held 120-hour and 24-hour courses for environmental education volunteers in Miaoli County, with 36 and 33 trainees participated separately. ✓ Departments of NUU offers following courses on climate change issues: Energy Engineering: “Energy-saving Technologies” “Sustainable Energy and Change Adaptation” Civil and Disaster Prevention Engineering: “Disaster Mitigation in Geotechnical Engineering” “Soil and Water Conservation Engineering” “Hydraulic Engineering and Flood Mitigation” Chemical Engineering: “Green Chemical Engineering” Electrical Engineering: “Solar Cell”

				物的來源、到食物的履歷、再談到最近熱門議題，美豬來台！「瘦肉精」萊克多巴胺對人體的風險評，為了我們的健康，生態環境的健康，讓我們一起來探討餐桌上的祕密。 ✓ 110 年 04 月 22（星期四）華語文學系何照清老師接受本校通識課程「幸福人生的秘密」之邀請為修課學生談護生蔬食可幫助飢荒糧食不足的人類，也可減緩暖化及氣候變遷等問題。 ✓ 本校環境教育及永續發展中心於今年 109 年 7-8 月辦理「109 年苗栗縣環境教育志工增能培訓課程(120 小時)」，其中即有「環境防災與資訊管理」課程，參與訓練學員共 36 人次。 ✓ 本校環境教育及永續發展中心於今年 109 年 7 月辦理「109 年苗栗縣環境教育志工增能培訓課程(24 小時)」，其中即有「環境變遷與防災」課程，瞭解國內外對環境變遷與防災之因應策，及如何落實環境變遷與防災之環境教育，參與訓練學員共 33 人次。 ✓ 能源系開設節能技術、永續能源與變遷調適；環安系開設大氣化學；土木系開設大地災害防治、水土保	Electro Optical Engineering: “Photovoltaic Battery” Architecture: “Design techniques of Green Building” ✓ A research on oral tradition of Maylubung were carried out to discover ancient wisdom to cope with climate change, providing ideas for modern disaster prevention technology. ● 相關法規及佐證資料 https://drive.google.com/drive/folders/1DmJWZTLEMhiovij0GBpiME4jjiP3wCY9?usp=sharing

				持工程、水利與颱洪防災工程；化工系開設綠色化工；機械系開設熱傳學；電機系開設太陽能電池、材料製程實驗；光電系開設固態照明、光伏特電池；建築系開設綠建築設計技術，使了解氣候變遷造成之風險與影響以及如何減緩與適應其影響。 ✓ 語傳系老師黃惠禎執行科技部專題研究計畫「梅園部落口述傳統整理與研究」，蒐集梅園部落遷徙史與天然災害的關係，以及如何因應氣候劇烈變遷導致的瞬間強降水之泰雅族傳統智慧，提供現代土木防災科技參考。	
13.3.2 - Does your university as a body have a university Climate Action plan, shared	SDG13 氣候行動	共享式氣候行動計畫	與當地政府和地方社區團體共享的氣候行動計劃 *氣候行動計劃：是衡量、規劃和減少溫室氣體(GHG)排放	● 量化資料： ● 質化資料 ✓ 土木與防災工程學系柳文成教授，107 年至今配合教育部推動氣候變遷減緩及調適教學計畫，針對災害中防洪系統撰寫及教材，包含說明如何衡量溫室氣體、氣候變遷對防洪系統的影響及如何減緩溫室氣體排放與防洪系統之調適策	• Qualitative data Yes • Quantitative data ✓ Wen-Cheng Liu, a distinguished professor of Department of Civil and Disaster Prevention Engineering, has cooperated with the Ministry of Education since 2018 to promote teaching plans of climate change mitigation and adaptation. Professor Liu wrote textbooks on flood control systems, explaining how to measure greenhouse gas, how

with local government and/or local community groups?			和相關氣候影響的詳細戰略框架	略，其教材為共享資源，提供給各縣市政府與大學教師使用。 ● 相關法規及佐證資料 https://climatechange.tw/	climate change influence flood control systems, how to reduce greenhouse gas emission, etc. The textbooks were shared with local governments and university teachers. ・Relevant regulations and proving data https://climatechange.tw/
13.3.3 - Does your university as a body participate in co-operative planning for climate change disasters, working with government?	SDG13 氣候行動	應對氣候變化災害的合作計畫	與政府合作，參與應對氣候變化災害的合作規劃	● 量化資料： ● 質化資料 ✓ 能源工程學系陳律言副教授獲 110 學年度教育部補助大專校院氣候變遷教學活動計畫 ✓ 能源工程學系陳律言副教授執行環保署 108 年度「補助溫室氣體減量管理及氣候變遷調適研究發展計畫」 ● 相關法規及佐證資料 https://climatechange.tw/Subsidy/AnnouncementList	・Qualitative data regional ・Quantitative data ✓ Lu-yen Chen, an associate professor of the Department of Energy Engineering, received 2011 academic year subsidy from the Ministry of Education for college education programs of climate change. ✓ Lu-yen Chen, an associate professor of the Department of Energy Engineering, carried out the research project on greenhouse gas reduction management and climate change adaptation, subsidized by Environmental Protection Administration in 2019. ・Relevant regulations and proving data https://climatechange.tw/Subsidy/AnnouncementList
13.3.4 - Does your university as a body inform and	SDG13 氣候行動	為政府提供訊息和支持	在地方氣候變化災害或風險預警和監測方面向當地或區域	● 量化資料： ● 質化資料 土木與防災工程學系柳文成教授執行科技部計畫「都會區水動力多	・Qualitative data Yes ・Quantitative data ✓ Wen-Cheng Liu, a distinguished professor of

support local or regional government in local climate change disaster/risk early warning and monitoring?			政府提供訊息和支持	模式系集模擬平台研發與應用-波浪-暴潮模擬分析及都會區FLO-2D 淹水模式之平台研發與應用(總計畫及子計畫五)(III)」 土木與防災工程學系李中生助理教授執行科技部計畫「中央與地方防救災情資整合管理研究計畫-苗栗縣-中央與地方防救災情資整合管理研究計畫-苗栗縣(3/3) 」 土木與防災工程學系柳文成教授執行科技部計畫「都會區水動力多模式系集模擬平台研發與應用-波浪-暴潮模擬分析及都會區FLO-2D 淹水模式之平台研發與應用(總計畫及子計畫五)(Ⅱ)」 土木與防災工程學系江莉琦助理教授執行科技部計畫「中央與地方防救災情資整合管理研究計畫-苗栗縣-中央與地方防救災情資整合管理研究計畫-苗栗縣(2/3) 」 土木與防災工程學系柳文成教授執行科技部計畫「都會區水動力多模式系集模擬平台研發與應用-波浪-暴潮模擬分析及都會區FLO-2D 淹水模式之平台研發與應用(總計畫及子計畫五)(I)」 土木與防災工程學系江莉琦助理教授執行科技部計畫「中央與地方防救災情資整合管理研究計畫-苗栗縣-中央與地方防救災情資整合管理研究計畫-苗栗縣(1/3) 」	Department of Civil and Disaster Prevention Engineering, carried out the project of Ministry of Science and Technology “The Simulation and Analysis of Wave-Storm Surge and Development and Application of Platform of FLO-2D Model at Urban Areas (Main Project and Subproject V) (III), (II), and (I).” ✓ Chung-Sheng Lee, an assistant professor of Civil and Disaster Prevention Engineering, carried out the project of Ministry of Science and Technology “Management and Integration of Central and Local Information for Disaster Prevention - Miaoli County (3/3).” ✓ Li-Chi Chiang, an assistant professor of Civil and Disaster Prevention Engineering, carried out the project of Ministry of Science and Technology “Management and Integration of Central and Local Information for Disaster Prevention - Miaoli County (2/3) and (1/3).” • Relevant regulations and proving data https://eocdss.ncdr.nat.gov.tw/web/ot/ml https://dananddian.weebly.com/

				● 相關法規及佐證資料 https://eocdss.ncdr.nat.gov.tw/web/ot/ml https://dananddian.weebly.com/	
13.3.5 - Does your university as a body collaborate with NGOs on climate adaptation?	SDG13 氣候行動	在環境教育方面與非政府組織合作	氣候適應方面與非政府組織合作	● 量化資料： ● 質化資料 土木與防災工程學系柳文成教授與新系環境技術有限公司合作辦理苗栗境內環境教育課程(苗栗縣公館鄉出磺坑環境教育基礎訓練課程,2021/08/26)，並支援授課說明氣候變遷相關內容。 https://drive.google.com/drive/folders/1RaCHWTMTQlD3vvc6U05DnYX9o9QX5UaX?usp=sharing 	・Qualitative data Yes ・Quantitative data Wen-Cheng Liu, a distinguished professor of Department of Civil and Disaster Prevention Engineering, cooperated with Newsys Environmental Technology Inc. to deliver education courses in Miaoli, and gave a lesson on climate change. (Basic Environmental Education Courses in Chu Huang Keng, Gongguan Township, Miaoli County. 2021/08/26) https://drive.google.com/drive/folders/1RaCHWTMTQlD3vvc6U05DnYX9o9QX5UaX?usp=sharing

				 ● 相關法規及佐證資料 原分配教學單位無提供資料	
13.2.1 Low carbon energy tracking Year: 2019 Please provide one piece of evidence to demonstrate measurement of the amount of low carbon energy used across the university.				Low-carbon achievements in NUU are as follows: 1. Setting solar power system in campus in 2018 and it provides 3,717,068 kWh in 2020. 2. Creating new energy, including fuel cell and vanadium flow battery. 3. NUU is one of Environmental Education Institution certified by EPA and provides environmental education courses for all people. https://eecs.epa.gov.tw/frontRWD/_cert/agency_qry.aspx 4. NUU provides energy educations for elementary and middle school students. 5. NUU is one of Energy-saving Diagnostic Service Center in Taiwan, which certified by Bureau of Energy for	Low-carbon achievements in NUU are as follows: 1. Setting solar power system in campus in 2018 and it provides 3,717,068 kWh in 2020. 2. Creating new energy, including fuel cell and vanadium flow battery. 3. NUU is one of the Environmental Education Institution certified by EPA and provides environmental education courses for all people. 4. NUU provides energy educations for elementary and middle school students. 5. NUU is one of the Energy-saving Diagnostic Service Centers in Taiwan, which is certified by the Bureau of Energy for energy-saving service. 6. NUU has built an Intelligent Energy Management System for monitoring and controlling campus electricity. 7. NUU is one of the toxic matters and chemicals response training institutions certified by EPA and provides response training courses for all people.

				energy-saving service. https://www.ecct.org.tw/services/small_users#tablist 6. NUU has built an Intelligent Energy Management System for monitoring and controlling campus electricity. https://em.nuu.edu.tw/p/412-1029-1841.php?Lang=zh-tw 7. NUU is one of toxic matters and chemicals response training institution certified by EPA and provides response training courses for all people. https://www.tcsb.gov.tw/fp-500-5357-1c52c-1.html 8. NUU cooperates with NCDR (National Science and Technology Center for Disaster Reduction) to reduce regional and national natural disaster damages. 9. NUU promotes local renewable energy and cooperates with offshore wind-power company. 10. NUU built an electric motorcycle demonstration laboratory. http://ces.nuu.edu.tw/zh_tw/IP	・Relevant regulations and proving data https://eecs.epa.gov.tw/frontRWD/_cert/agency_qry.aspx https://em.nuu.edu.tw/p/412-1029-1841.php?Lang=zh-tw https://www.tcsb.gov.tw/fp-500-5357-1c52c-1.html