



Rhwydwaith WISE

WISE Network

Arloesi Cynaliadwy mewn Busnes
Sustainable Innovations for Business

Cyflwyniad

Introduction

Mae Rhwydwaith WISE yn darparu cyfle unigryw i fusnesau weithio mewn partneriaeth gyda Phrifysgolion Aberystwyth, Bangor ac Abertawe. Rydym yn ceisio mewnblannu cynaliadwyedd yng nghalon busnesau drwy'r cyfleusterau a'r arbenigedd sydd ar gael oddi fewn i ddiwydiant a sefydliadau academaidd Cymreig.

Gall cyd-weithio gyda Rhwydwaith WISE gynorthwyo eich busnes i ffynnu yn y dyfodol a thyfu mewn amgylchedd sy'n gynyddol effeithiol o ran adnoddau. Yn ogystal, gall y busnesau hynny sy'n gweithredu yn y sector Amgylcheddol fod mewn sefyllfa dda i gymryd mantais o'r cyfleoedd sy'n cael eu cynnig drwy'r twf presennol yn y diwydiannau Gwyrdd.

Bydd Rhwydwaith WISE yn creu diwylliant o bobl busnes hyderus sy'n defnyddio ymchwil, arbenigedd, technoleg'r gallu i arloesi fel elfen allweddol o'u datblygiad yn y dyfodol.

Mae eich busnes yn unigryw a dyma paham y byddem yn gweithio gyda chi drwy drafod mewn manylder ac ymchwil dichonoldeb i adnabod atebion wedi eu teilwra i'ch anghenion.

Drwy Rhwydwaith WISE, bydd amrediad eang o arbenigedd a chyfleusterau ar draws tair Prifysgol at eich gwasanaeth. Mae hyn yn cynnwys tai gwyrdd, labordai, stiwdio ffilm a theledu, echdynnydd CO₂ uwch gritigol, labordai cemeg, llinellau allwthiad, man gynhyrchu graddfa beilot, TG, a delweddu i enwi rhai.

Cydweithwch gyda Rhwydwaith WISE i sicrhau y gall eich busnes fanteisio'n llawn ar dwf yr Economi Werdd trwy ddatblygu cynnyrch, prosesau a gwasanaethau cynaliadwy.

WISE Network provides a unique opportunity for business to work in partnership with Aberystwyth, Bangor, and Swansea Universities. Through the facilities and expertise available within both Welsh industry and the academic institutions, we seek to embed sustainability at the heart of all businesses.

Collaboration with WISE Network will help to future proof your business. Enabling it to thrive and grow in an increasingly resource-efficient environment. In addition, those businesses operating in the Environmental sector will be equipped to take full advantage of the opportunities presented by the current growth in Green industries.

WISE Network will create a culture of confident businesses that use research, expertise, technology and innovation capacity as an essential component in their future development.

Your business is unique and this is why we will work with you through in-depth discussion and feasibility research to identify the tailored solutions that meet your needs.

Through WISE Network, an extensive range of expertise and facilities across the three Universities will be at your disposal. This includes greenhouses, labs, film and TV studio, super critical CO₂ extractor, chemistry labs, extrusion lines, pilot scale manufacture, IT, and visualisation to name but a few.

Partner with WISE Network to ensure that your business can take full advantage of the growth in the Green Economy by developing sustainable products, processes and services.

Busnesau Cynaliadwy

Sustainable Businesses

"Roedd gweithio gyda'r Tim Datblygu Busnes Cynaliadwy yn brofiad cadarnhaol ac yn chwya o awyry iach. Cefais syndod fod ganddynt ddiddordeb go iawn ym moeseg y busnes. Roedd eu hagwedd yn wych ac fe wnaethon nhw dynnu syniadau arloesol at ei gilydd i helpu symud fy musnes yn ei flaen." Gareth Bull, Perchennog, Reefshotz

Rhaid i bob cwmni sy'n derbyn cyllid Ewropeaidd ymgysylltu â'r ddwy thema drawsbynciol o reolaeth amgylcheddol a chydaddoldeb ac amrywiaeth. Bydd pob busnes sy'n gweithio gyda Rhwydwaith WISE yn ymrwmo i gwblhau o leiaf un weithred gadarnhaol ar y pynciau hyn. Bydd llawer ohonynt yn symud ymlaen gyda chymorth ein hymarferwyr profiadol, i ddatblygu arferion busnes cynaliadwy eraill i gynyddu eu mantais gystadleuol ymhellach.

Ymhen cwta ddeg i bymtheg munud gyda'n Prawflechyd ar-lein gall eich busnes gyrchu bolisiâu newydd ac adborth personol ar faterion sy'n bwysig i chi. Fel bonws, ar ôl i chi gwblhau'r gweithredoedd y bu ichi ymrwmo i'w cyflawni byddwch yn derbyn ein Nod Siarter i ddangos eich ymrwymiad i arferion busnes cynaliadwy.

"Working with the Sustainable Business Development Team has been a refreshing and positive experience and they were really interested in the ethics of my business. They had such a great attitude and were able to tease out innovative product ideas to help take the business forward". Gareth Bull, Proprietor, Reefshotz.

All companies receiving European funding must engage with the cross-cutting themes of environmental management and equality and diversity. All WISE Network businesses undertake to complete at least one positive action on both these topics. Many move on with the help of our experienced practitioners, to develop other sustainable business practices to further increase their competitive edge.

Just ten to fifteen minutes help from our online HealthCheck enables businesses to access policies and personalised feedback on issues that matter to you. As a bonus, once the actions are completed you receive a Charter Mark, demonstrating your business commitment to sustainable practice.



Hufenfa De Arfon/Wynnstay

South Caernarfon Creameries/Wynnstay

Sicrhau ansawdd yng nghadwyn gyflenwi'r diwydiant prosesu llaeth

Mae cynhyrchu caws Cheddar angen llaeth sy'n cynnwys lefelau protein uchel a chyson. Mae llaeth sy'n isel o ran protein hefyd yn golygu colled ariannol i gynhyrchwyr unigol gan fod cytundebau caws yn seiliedig ar gyfansoddiad y protein.

Mae Rhwydwaith WISE yn cydweithio â Hufenfa De Arfon a Wynnstay i ddatblygu offeryn ar-lein syml sy'n galluogi cynhyrchwyr i raddio'r cynnyrch o ran y protein sydd ynddo, a bydd ar yr un pryd yn adnabod y potensial o ran enillion ychwanegol ar gyfer y cynhyrchydd os bydd cynnwys protein y llaeth yn gwella. Bydd hefyd yn darparu adborth a chyngor sydd ar gael o ran rheoli, bridio a maetheg.

Rhagwelir y bydd y prosiect yn datblygu, gan ymgysylltu â phartneriaid busnes yn y gadwyn gyflenwi i ddatblygu offerynnau adborth amser go-iawn i'r cynhyrchydd. Bydd offerynnau a dulliau cymorth o'r fath yn targedu'r farchnad gaws (mae canran y DU ryw £3 biliwn) ac mae'r potensial i fasnacheiddio yn fyd-eang yn arwyddion cryf o becyn cynnyrch Cymreig newydd a chryf.

Securing supply chain quality in the milk processing industry

Cheddar cheese production requires milk of high, consistent protein content. Low milk protein represents a financial loss to individual producers as contracts for cheese are based on protein content.

WISE Network with South Caernarfon Creameries and Wynnstay will develop a simple online application which will enable producers to rank their product in terms of protein content, simultaneously identifying potential additional earnings for the producer if milk protein content is improved. Feedback and guidance on management, breeding and nutrition will be provided too.

It is envisaged that the project will grow, engaging with new business partners along the supply chain to develop real time feedback tools for the producer. Such support tools and methods target the cheese market (£3bn UK share approximately) and the potential worldwide commercialisation are strong indicators of a new, strong Welsh product package.



Phytorigins

Phytorigins

Effaith echdynion planhigion ar ficrobiota coluddion anifeiliaid anwes

Gordewdra yw'r anhwylder maethol mwyaf cyffredin mewn anifeiliaid anwes ac mae'n destun pryder cynyddol ymhlith eu perchenogion. Mae microbiota coluddion yn chwarae rhan allweddol wrth reoli gordewdra oherwydd eu heffaith ar dreulio bwyd, amsugno maethynnau a iechyd y coluddyn.

Mae Phytorigins yn cydweithio â'r Rhwydwaith WISE i ymchwilio a fyddai modd defnyddio ychwanegion bwyd penodol i addasu microbiota'r coluddion. Gwyddom llai ynghylch sut, neu os yw, ychwanegion bwyd yn gweithio mewn anifeiliaid anwes. Mae hyn yn bennaf oherwydd yr anawsterau arbrolfol o weithio gyda chathod a chŵn byw. Datblygir llwyfan fydd yn dynwared coluddion cathod a chŵn er mwyn gwerthuso effaith ychwanegion bwyd ar boblogaethau microbaidd y coluddyn a'r potensial o ran lleihau gordewdra.

Bydd y farchnad fyd-eang ar gyfer bwyd anifeiliaid yn cyrraedd UD\$95.7 biliwn erbyn 2017, yn ôl gwaith dadansoddi annibynnol gan GIA (2011), gan agor y drws ar gyfer masnacheiddio cynnyrch prosiectau partneriaid Rhwydwaith WISE a manteision sylweddol posibl i'r Economi yng Nghymru.

Effect of plant extracts on gut microbiota of companion animals

Obesity is the most common nutritional disorder in companion animals and of increasing concern amongst their owners. Gut microbiota plays a key role in controlling obesity through their effect on food digestion, nutrient absorption and gut health.

Phytorigins with WISE Network are investigating whether the use of specific feed additives could modify gut microbiota. Not much is known about how or if feed additives work in companion animals, because of experimental difficulties in working with live animals. A platform that mimics the canine and feline gut will be developed in order to evaluate the effect of feed additives on the gut microbial populations and potential in reducing obesity.

The global pet food market is set to reach US\$95.7 billion by 2017, according to independent analysis by GIA (2011), opening up excellent opportunities for commercialisation of project outputs for the WISE Network partners and potential significant gains for the Welsh Economy.



Treeflights

Treeflights

Dilysu cynnyrch encilio carbon cymunedol yn Kenya

“Yn Treeflights rydym yn falch tu hwnt o’n partneriaeth gyda WISE gan ei fod wedi bod yn hanfodol o safbwynt ein helpu i ennill dyfarniad o £10,000 yn ddiweddar dan Gynllun Grantiau Ynni Glân Llywodraeth Cymru. Pwrpas y dyfarniad hwn yw sefydlu Prosiect Coedwig Menywod Bore a fydd yn plannu 50,000 o goed newydd mewn ardal o Kenya sydd wedi profi datgoedwigo difrifol” Ru Hartwell.

Mae Treeflights yn gwmni di-elw yn Llanbedr Pont Steffan yn cynnig system wirfoddol o wrthbwyso carbon lle y gall cwmnïau neu unigolion dalu am brosiectau blannu coed neu amddiffyn coedwigoedd yn Kenya. Dosbarthir coed Cashiw i ffermwyr lleol i’w plannu ar eu tir eu hun. Mae’r coed hyn yn gallu gwrthsefyll sychder, yn tyfu’n gyflym ac yn cynhyrchu cnwd gwerthu defnyddiol, uchel mewn protein ar ôl cyn lleied â 4 blynedd.

Mae gan y ffermwyr ddiddordeb personol mewn sicrhau bod eu coed yn goroesi oherwydd eu bod yn rhoi incwm arall i’r gymuned heblaw am dorri eu coedwig bresennol i lawr er mwyn cynhyrchu golosg.

Rôl Rwydwaith WISE yn y prosiect yw defnyddio data synhwyro o bell a Systemau Gwybodaeth Ddaearyddol i ddod o hyd i ardaloedd plannu coed ac i ddangos tyfiant coed dros amser.



Validation of a Kenyan community carbon sequestration product

“At Treeflights we are tremendously pleased with our partnership. It has been pivotal in helping us win £10,000 under the Welsh Governments Clean Energy Grant Scheme to implement the Bore Women’s Forest Project to plant 50,000 new trees in areas of Kenya subject to serious deforestation” Ru Hartwell.

Treeflights is a Lampeter based non-profit company offering voluntary carbon offsetting whereby companies or individuals pay for tree planting or forest protection community projects based in Kenya. Drought resistant, fast growing Cashew trees are distributed to local farmers to plant on their own land to produce a useful high-protein cash crop after as little as 4 years.

The farmers have a strong vested interest in ensuring that their trees survive as they provide an alternative income to the community, instead of the charcoal made traditionally.

WISE Network uses remotely sensed data and GIS to depict tree-planting areas and demonstrate tree growth over time.

Reefshotz

Reefshotz

Boteli plastig dosio bioddiraddadwy

Mae Reefshotz yn gweithio gyda Rhwydwaith WISE i archwilio addasrwydd plastig bioddiraddadwy i botelu eu algâu byw a chynnyrch copepod sy'n darparu bwyd naturiol i organebau mewn acwaria domestig, a gwneud ymchwil i'r farchnad i ddadansoddi cyfleoedd a bygythiadau masnachol.

Mae Tim Ymchwil Biopolymer Rhwydwaith WISE yn darparu cymorth i asesu pa mor addas yw nifer o ffilmiau polymer bioddiraddadwy, yn cynnwys, eu cryfder ac ystwythder i gael eu diraddio gan eu cynnwys, eu haddasrwydd ar gyfer storio, cludo a mesur dosiau o'r meithriniadau byw bregus.

Gall y prosiect yma ddatblygu ymhellach i benderfynu pa mor hyfyw y byddai i'r defnyddwyr aildefnyddio'r poteli gwag fel ffynhonnell carbon ar gyfer y bacteria mewn acwaria morol domestig i ddisodli'r angen i brynu gleiniau bioddiraddadwy polymer arbenigol rhannol neu'n llawn ar wahân.

Mae Gareth yn gefnogol iawn i weithio gyda Rhwydwaith WISE: "Nid yw'r lefel yma o arbenigedd ar gael i gwmnïau sy'n dechrau fel arfer heb fod yn grochris, felly mae o fantais fawr i Reefshotz".

Biodegradable plastic dosing bottles

Reefshotz is working with WISE Network to explore the suitability of biodegradable plastics to bottle their live algae and copepod products which provide natural food for organisms in domestic marine aquaria, and to undertake market research to analyse potential commercial opportunities and threats.

WISE Network's Biopolymers Research Team is providing assistance to assess the suitability of a number of biodegradable polymer films, including, their strength and resilience to degradation by their contents, and their appropriateness for storing, transporting and measuring doses of Reefshotz's delicate live cultures.

This project could further develop to determine the viability of end users reusing the empty bottles as a carbon source for bacteria in domestic marine aquaria to partially or wholly replace the need to separately purchase specialist biodegradable polymer beads.

Gareth fully endorses working with WISE Network: "This level of expertise is not normally available to start-up companies without being cost prohibitive, so it has been of huge benefit to Reefshotz".



Cwmni Da

Cwmni Da

Arogl clychau'r gog

Cynhyrchodd Cwmni Da, cwmni cynhyrchu ffilm wedi ei leoli yng Nghaernarfon, gyfres chwe rhan o'r enw "Wild Things" i Sianel 4. Darlledwyd rhaglen ar gylchau'r gog ar ddechrau 2013, oedd yn dangos (ymhlith pethau eraill) ei bod yn bosib gwahaniaethu clychau'r gog brodorol a rhai hybrid wrth eu harogl yn unig. Mae gan glychau'r gog brodorol (*Hyacinthoides non-scripta*) arogl, ond nid oes arogl ar y clychau'r gog o Sbaen.

Staff Rhwydwaith WISE oedd yn gyfrifol am y gwaith ditectif dadansoddol. Daeth y rhaglen i'r casgliad bod arogl clychau'r gog yn rhan o'r broses adnabod fotanegol ac yn nodwedd forffolegol oedd yn galluogi eu hadnabod fel rhai 'brodorol pur', 'Sbaeneg' neu 'hybrid' ond bod angen rhagor o waith.

Felly, nid hyn yw diwedd y stori - yn ystod y tymor blodeuo nesaf byddwn yn ceisio casglu digon o arogl i'n galluogi i arunigo'r cyfansoddion unigol. Efallai y bydd yn bosib potelu olew hanfodol clychau'r gog wedi'r cyfan!

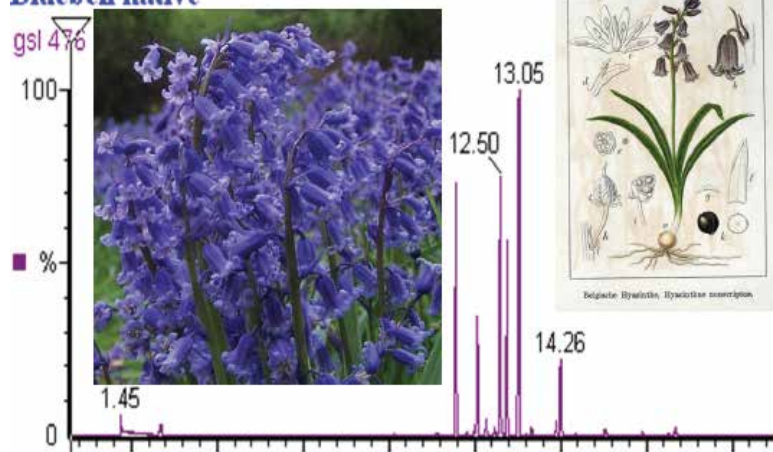
Detecting bluebell scent

Cwmni Da, a film producing company located in Caernarfon, produced "Wild Things" a six part series for Channel 4. Early in 2013 an episode on bluebells was broadcast, which amongst other things showed that it is possible to distinguish native and hybrid bluebells by scent alone. The native bluebells (*Hyacinthoides non-scripta*) are scented, the Spanish bluebells are not.

The analytical detective work was undertaken by WISE Network staff. The conclusion of the programme was that as part of the botanical identification process, whether bluebells are scented or not is a morphological characteristic that enables them to be classified as 'pure native', 'Spanish' or 'hybrid' but that more work is required.

So, the story is not over yet. During the next flowering season we will be trying to collect sufficient scent to enable us to isolate the individual compounds. Perhaps bluebell essential oil can finally be bottled!

Bluebell native



Waterco

Waterco

“SuperSuDS”: ymagwedd naturiol tuag at leihau perygl llifogydd

“Mae Rhwydwaith WISE wedi agor drysau i Waterco gyrchu data gofodol grymus, sydd, trwy arbenigedd y prosiect gyda GIS a'r amser maent wedi'i gymryd i ddeall a dehongli ein busnes, yn cyfrannu'n sylweddol at ein nod i gyflenwi lleihad perygl llifogydd trwy weithredu ymagweddau naturiol.” Paul Hodgkiss, Waterco.

Mae'r tirwedd polisi rheoli dŵr wedi newid, gyda'r pwyslais yn symud oddi ar 'amddiffyn' at 'reoli perygl' llifogydd. Mae galw wedi bod am gyflwyno ymagweddau mwy cynaliadwy, gwydn fel mentrau gwyrdd ynghylch seilwaith gan gynnwys 'SuDS', golchdiroedd, adfer gorlifdiroedd, creu gwlyptiroedd a choetiroedd. Eto mae datrysiadau peiriannu traddodiadol yn parhau, â chymorth cymhlethdodau gwerthuso ymagweddau 'cynaliadwy' ac 'integredig' newydd, gyda nifer o randdeiliaid, datrysiadau ariannu a thirfeddianwyr.

Trwy ddatblygu ymagwedd integredig, systematig, rydym yn anelu at lywio'r cymhlethdodau hyn i gyflenwi prosiectau 'prif ffrwd' a chreu gwasanaeth arloesol i reoli perygl llifogydd er mwyn cynnig ymagwedd fwy cost-ffeithiol a naturiol.

“SuperSuDS”: a natural approach to alleviating flood risk

“WISE Network has opened doors for Waterco to access powerful spatial data, which through the project's expertise with both GIS and the time they have taken to understand and interpret our business is dramatically contributing to our aim to deliver flood risk alleviation through the implementation of natural approaches.” Paul Hodgkiss, Waterco.

The water management policy landscape has changed, with emphasis moving from flood 'defence' to flood 'risk management'. There has been a call for more sustainable, resilient approaches such as green infrastructure initiatives including 'SuDS', washlands, floodplain restoration, wetland and woodland creation. Yet traditional engineering solutions persist, aided by the complexities of evaluating new 'sustainable' and 'integrated' approaches, with numerous stakeholders, funding solutions and landowners.

Developing an integrated, systematic approach, we aim to navigate these complexities to deliver 'mainstream' projects and create an innovative, flood risk management service to offer a more cost effective natural approach.



Wildbytes Ltd

Wildbytes Ltd

Mesur ymatebion dynol i'r amgylchedd ffisegol ar gyfer dadansoddiadau ymddygiadol

"Mae Rhwydwaith WISE wedi'n helpu'n fawr o safbwynt gyrru ein cyfnod datblygu cynnyrch ymlaen drwy ddarparu mynediad i gyfleusterau o'r radd flaenaf ac arbenigedd ym maes mesuryddion cyflymu." Rory Wilson, Cyfarwyddwr Wildbytes.

Mae'r prosiect yn ceisio mesur ymatebion dynol yn rheolaidd i'r amgylchedd ffisegol o eiliadau i flynyddoedd, gan ddefnyddio mesuryddion cyflymu a meddalwedd delweddu pwrpasol ar gyfer dadansoddiadau ymddygiadol.

Mae Rhwydwaith WISE yn cynorthwyo â'r gwaith o ddatblygu'r dechnoleg i sicrhau ei fod yn gweithio gyda phobl. Yn hyn o beth gallwn bennu perfformiad ffisegol unigolion, eu hiechyd ac effeithlonrwydd cyffredinol, eu gallu i nodi ac ymdopi â phwysau a'u gallu i ymadfer o anafiadau corfforol a meddyginiaeth. Mae hyn yn amlwg yn bwysig mewn cyd-destun cynnyrch meddygol, iechyd a ffitrwydd, ac mae Rory wrth ei fodd gyda'r cynnydd.

"Ni fyddai modd i ni allu datblygu ein cynnyrch mor gyflym heb Rhwydwaith WISE," meddai Rory.

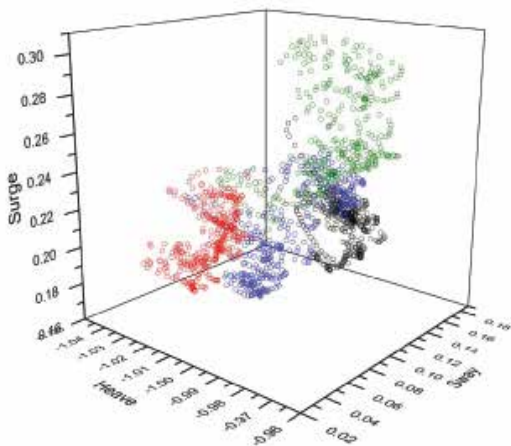
Quantifying human responses to the physical environment for behavioural analyses

"WISE Network helped us significantly in driving our product development phase forward by providing access to state of the art facilities and accelerometers expertise." Rory Wilson, Director Wildbytes."

The project sets out to routinely quantify human responses to the physical environment from seconds to years, by the use of accelerometers and bespoke visualisation software for behavioural analyses.

WISE Network is assisting in developing the technology to ensure that it works with people. Therefore we can determine a person's physical performance, general health and efficiency, ability to register and cope with stress and their ability to rehabilitate from physical injury and medication. This is clearly important in a medical, health and fitness products, and Rory is delighted with progress.

"We would never be able to develop our product as quickly without the WISE Network," Rory states.



CommonsVision Ltd

CommonsVision Ltd

Cynhyrchu bio-ologsg yn gyflym o gynaeafau rheoli tir cyffredin

"Gyda buddsoddiad gan Rhwydwaith WISE rydym wedi llwyddo i ddatblygu ein cysyniadau o'r bwrdd cynllunio hyd at y cam masnacheiddio, gwasanaeth arbennig." Siôn Brackenbury, Rheolwr Prosiect.

Mae CommonsVision Cyf yn gweithio gyda Rhwydwaith WISE i ddatblygu cynhyrchu bio-ologsg yn gyflym o borthiant sy'n cael ei symud yn aml o dir cyffredin megis rhedyn, yn ogystal â rhywogaethau ymledol megis rhododendron a balsam Himalaiaidd. Mae Timoeidd Ymchwil Bio-ologsg a Geocemeg Organig Rhwydwaith WISE yn datblygu'r gwaith dylunio ac adeiladu ar gyfer yr uned pyrolysis a ddefnyddir i gynhyrchu bio-ologsg drwy brofi'r nwyon a'r gronynnau a gynhyrchir er mwyn optimeiddio'r broses. Mae'r porthiant a'r bio-ologsg hefyd yn cael eu profi er mwyn asesu a yw'r bio-ologsg a gynhyrchir o rywogaethau ymledol yn addas i'w ddefnyddio fel defnydd gwella pridd.

"Mae'r cyngor arbenigol a gafwyd, y gwaith dadansoddi a wnaed a'r mynediad a roddir i offer ymchwil wedi'n galluogi i ddatblygu ein syniadau a phrofi ein prosesau i gydweithwyr a rheolyddion yn y DU" meddai Siôn.

Rapid biochar production from common land management harvests

"With investment from WISE Network we have been able to develop our concepts from the drawing board to commercialisation, a fantastic service." Siôn Brackenbury, Project Manager.

CommonsVision Ltd is working with WISE Network to develop rapid production of biochar from feedstocks that are removed from common ground such as bracken, as well as other invasive species such as rhododendron and Himalayan balsam. WISE Network's Biochar and Organic Geochemistry Research Teams are developing the design and build of the pyrolysis unit used to produce biochar by testing the flue gases and particulates produced in order to optimise the process. Analysis of the feed stocks and biochar are also being tested to assess whether the biochar produced from invasive species is suitable for use as a soil improver.

The expert advice provided, analyses undertaken and access to research equipment has enabled us to develop our ideas and prove our processes to colleagues and regulators within the UK" endorses Siôn.



Affresol Cyf

Affresol Ltd

Testio blociau "Cerrig Thermo Poly"

Mae Affresol Cyf yn gweithio gyda Rhwydwaith WISE i brofi blociau TPRTM (Cerrig Thermo Poly) am gynnwys styren yn yr aer o amgylch y blociau, trwytholchi, twf microbaidd a diraddiant o ganlyniad i dymheredd uchel a dwysedd golau UF uchel. Mae'r cwmni'n darparu system adeiladu gyflym, cost isel o ansawdd uchel wedi'i gwneud o TPRRM a ddefnyddir yn uniongyrchol yn lle fframiau pren a blociau concrid mewn tai.

Mae Tim Ymchwil Geocemeg Organig Rhwydwaith WISE yn darparu cymorth i brofi am gynnwys styren a allyrrir o'r blociau adeiladu.

Mae arbrofion trwytholchi hefyd yn cael eu cynnal i asesu a ellir defnyddio'r blociau hyn i gywasgu plastigion mewn safleoedd tirlenwi heb greu niwed i'r amgylchedd. Mae arbrofion yn cael eu cynnal i asesu diraddiant posib y blociau TPRTM oherwydd lefelau uchel o ddwysedd golau UF a thymheredd uchel.



Testing "Thermo Poly Rock" blocks

Affresol Ltd is working with WISE Network to test for styrene content in headspace, leaching, microbial growth and degradation due to high temperatures and high UV light intensity of TPRTM (Thermo Poly Rock) blocks. The company produces a high quality, low cost, quick construction system manufactured from TPRTM which is used as a direct replacement for timber frame and concrete block housing.

WISE Network's Organic Geochemistry Research Team is providing assistance to test for styrene content emitted from the construction blocks.

Leaching experiments are also being undertaken to assess whether these blocks could be used to condense plastics in landfill sites without harming the environment. Experiments are being undertaken to assess the potential degradation of the TPRTM blocks due to high levels of UV light intensity and high temperatures.

Vert2Grow

Vert2Grow

Ffyrdd newydd i dyfu busnesau a phlanhigion

Mae Mike Miles yn entrepreneur a PSG o Vert2Grow gyda syniad ac angerdd i newid y ffordd yr ydym yn tyfu a gwerthu planhigion trwy ddatblygu systemau hydroponig newydd sydd wedi'u cysylltu â systemau goleuo arloesol, a model cymdeithasol/ariannol sydd â'r potensial i sicrhau cyfalaf ar gost hynod o isel a strwythur ariannu gweithredol.

Mae Rhwydwaith WISE wedi cynnal ymchwil i brofi'r cysyniad er mwyn diffinio a meincnodi systemau newydd Vert2Grow o gymharu â dulliau gweithgynhyrchu cyfredol.

"Mae Rhwydwaith WISE wedi darparu cymorth hanfodol o safon uchel yn ystod cyfnod datblygu'r cynnyrch. Mae'r cymorth gwerthfawr hwn wedi cynnwys mewnbwn gwyddonol, cyfleusterau profi, persbectif arloesol, a hyd yn oed cefnogaeth foesol yn ystod y cyfnod heriol cynnar," meddai Mike. "Mae wedi bod yn ased datblygu amhrisiadwy, ac wedi ein galluogi i greu portffolio cyffrous o gynnyrch newydd ac arloesol yr ydym bellach yn eu cyflwyno i'r farchnad fyd-eang."

Novel ways to grow businesses and plants

Mike Miles is an entrepreneur and CEO of Vert2Grow with an idea and passion to change the way we grow and retail plants by developing novel hydroponic systems linked to innovative lighting platforms and a social/financial model which has the potential to create ultra-low cost capital and an operational funding structure.

WISE Network has undertaken proof of concept research to define and bench mark the new Vert2Grow systems against existing production methods.

"The WISE Network project has provided essential high quality support during our product development phase. This much valued support has been provided in terms of scientific input, trial facilities, innovative perspective and even moral support during the challenging early stages," says Mike. "It has proved to be an invaluable development asset and enabled us to create an exciting portfolio of new and innovative products that we are now taking to the global market place."



Sazani

Sazani

Carbon glas: cynllun Taliad am Wasanaethau Ecosystemau yn Zanzibar

Mae Sazani Associates yn sefydliad di-elw, ymchwil a datblygiad a leolir yng Nghaerfyrddin, yn arbenigo mewn ymgysylltu â'r gymuned trwy ymchwil a datblygiad cyfranogol o raglenni integredig ar gyfer datblygiad gwledig cynaliadwy yn y DU a thramor.

Darparodd Rhwydwaith WISE ddilysiad gwyddonol ar gyfer gwerth carbon glaswelltau môr a mangrofau er mwyn ymgeisio am gynlluniau credyd carbon.

Ymchwiliodd Sazani'r ardal leol ac mae wedi cefnogi ymgysylltu â'r gymuned, yn codi ymwybyddiaeth o fuddion economaidd ac amgylcheddol y goedwig fangrof ar gyfer a gyda phobl leol. I'r bobl leol, gall mangrofau helpu i amddiffyn ymylon traethau a chefnogi ecosystemau arfordirol, ac ar raddfa fyd-eang mae mangrofau'n maglu carbon a allai helpu ynghylch newid hinsawdd.

Mae Rhwydwaith WISE yn gweithio tuag at ddilysu stoc carbon glas y coedwigoedd mangrof a glaswelltau môr, a fydd yn eu galluogi i gefnogi cymunedau lleol trwy'r cynllun Taliad am Wasanaethau Ecosystem i reoli'r amgylcheddau'n fwy cynaliadwy, gan gynhyrchu bywoliaethau a buddion amgylcheddol.



Blue carbon: Payment for Ecosystems Services scheme in Zanzibar

Sazani Associates is a Carmarthen based non-profit, research and development organization, specialising in community engagement through participatory research and development of integrated programmes for sustainable rural development in the UK and overseas.

WISE Network to provided scientific validation of the carbon value of seagrasses and mangroves to apply for carbon credit schemes.

Sazani researched the local area and have supported community engagement, raising awareness of the economic and environmental benefits of the mangrove forest for and with local people. For the local people, mangroves can help protect shorelines and support coastal ecosystems, and on a global scale mangroves trap carbon which could help with climate change.

WISE Network is working towards validating the blue carbon stock of the mangrove and sea grass forests, which will enable them to support local communities through the Payment for Ecosystem Services scheme to manage the environments more sustainably, generating livelihoods and environmental benefits.

Gwent Electronic Materials Ltd

Gwent Electronic Materials Ltd

Monitro proses o swbstradau aur

Mae Gwent Electronic Materials Limited (GEM) yn cynhyrchu electroadau a argraffir ar sgrîn ar gyfer cymwysiadau synhwyro, er enghraifft, er mwyn monitro ansawdd awyr mewn amgylcheddau gwaith.

Cynorthwyodd Rhwydwaith WISE GEM gyda monitro proses eu swbstradau aur. Yn aml mae synwryddion electrocemegol yn defnyddio metalaau gwerthfawr fel arian, platinwm neu aur. O bwys mawr wrth gynhyrchu electroadau a argraffir ar sgrîn yw cyflawni dosbarthiad unfurf o ronynnau o swp i swp. Un techneg a ddefnyddir i asesu'r gronynnau aur yw dadansoddiad diffreithiad pelydr-x (XPD) sy'n asesu ffurf grisialaidd yr "aur" a argraffwyd. Defnyddiwyd XRD er mwyn mesur adeiladwaith coeth yr aur a osodwyd a sut mae'n amrywio gan ddibynnu ar amgylchiadau prosesu, felly addasodd GEM eu techneg cynhyrchu gan deilwra'r cynnyrch tuag at anghenion y cwsmer.

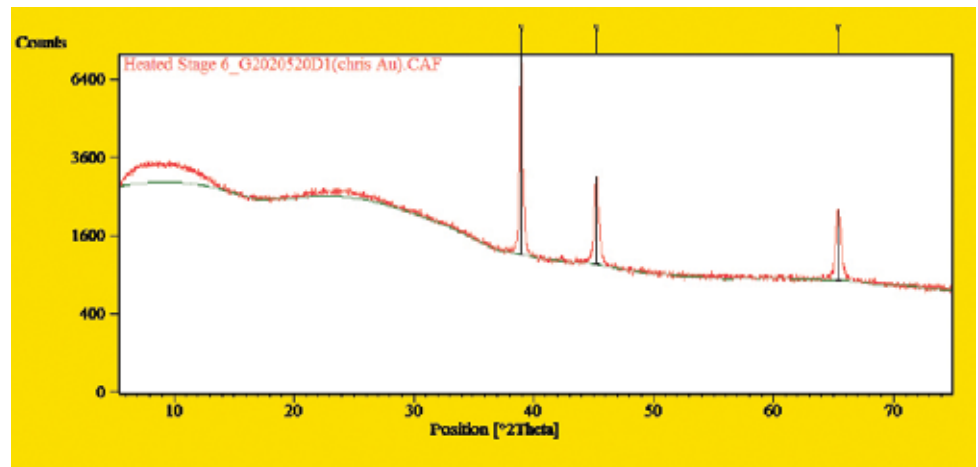
Mae Robin Pitson o GEM yn datgan "mae ein gwaith gyda Rhwydwaith WISE wedi'n helpu i ddeall ein cynhyrchion yn well ac yn y pen draw cyflenwi ansawdd well i'n cwsmeriaid".

Process monitoring of gold substrates

Gwent Electronic Materials Ltd (GEM) produce screen printed electrodes for sensing applications, for example, to monitor the air quality in work environments.

WISE Network assisted GEM with process monitoring of their gold substrates. Electrochemical sensors often use precious metals such as silver, platinum or gold. Of key importance for the production of screen printed electrodes is to achieve a uniform particle distribution from batch to batch. One technique used to assess the gold particles is x-ray diffraction (XRD) analysis that assesses the crystalline shape of the printed "gold". XRD was used to measure the fine structure of the deposited gold and how it varies depending on processing conditions, hence GEM modified their production technique and tailored the product towards the customer's needs.

Robin Pitson of GEM states that "our work with WISE Network helped us to understand our products better and ultimately deliver better quality to our customers".



Applied Enzyme Technology Limited

Applied Enzyme Technology Limited

Datblygu synhwyrdd seiliedig ar ensym i ganfod twbercwlosis yn gyflym

Mae Applied Enzyme Technology Limited (AET) yn arbenigo mewn sefydlogi ensym a ddefnyddir ar gyfer mesur metabolion gwahanol.

Mae twbercwlosis (TB) yn glefyd bacterol sy'n dod yn amlycach ledled y byd. Y ffordd arferol i ganfod TB yw cymryd sampl o boeryn a meithrin y bacteria i'w hadnabod, sy'n cymryd mis o leiaf. Mae AET yn datblygu synhwyrdd seiliedig ar ensym i ganfod TB mewn samplau o waed. Mae'r farchnad mewn gwledydd â digwyddiad uchel o TB a heb y seilwaith i feithrin samplau.

Asesodd Rhwydwaith WISE sefydlogrwydd nanoronynnau a ddefnyddir yn y synhwyrdd ac mae AET yn datblygu ffordd newydd o ganfod TB, maent wedi denu mwy o arian gan grantiau, ac wedi denu diddordeb Sefydliad Iechyd y Byd.

Mae Guido Drago o AET yn datgan "ein ffocws o'r Rhwydwaith WISE oedd i wella cynhyrchion cyfredol, ond arweiniodd hyn at gyfeiriad cwbl newydd yn strategaeth ein busnes".

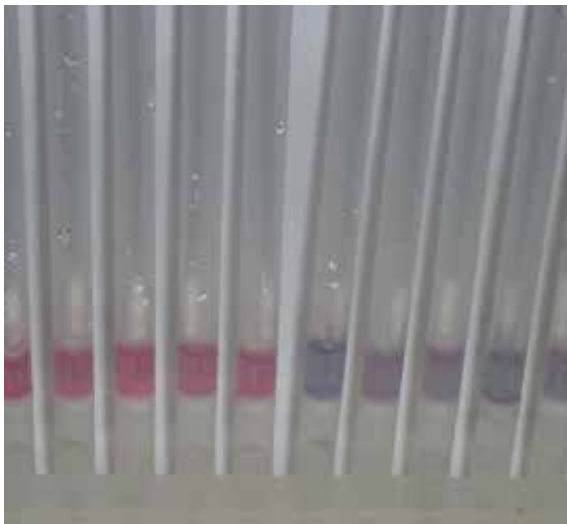
Development of an enzyme-based sensor to rapidly detect tuberculosis

Applied Enzyme Technology Ltd (AET) specialises in enzyme stabilisation used for the measurement of distinct metabolites.

Tuberculosis (TB) is a bacterial disease that is becoming more prevalent worldwide. The usual way to detect TB is to take a sputum sample and culture the bacteria to be identified taking at least a month. AET are developing an enzyme based sensor to detect TB in blood samples. The market is in countries with high incidence of TB and without the infrastructure to culture samples.

WISE Network assessed the stability of nanoparticles that are used in the sensor and AET are developing a novel way of detecting TB, have attracted further grant funding, and got the World Health Organisation interested.

Guido Drago of AET reports that "our focus from the WISE Network was for the improvement of current products, but this led to a whole new direction in our business strategy".



Hiraeth

Hiraeth

Pren Cymreig cynaliadwy wrth galon eich cartref

Daeth Emlyn Williams, Rheolwr Gyfarwyddwr Hiraeth™ at Rwydwaith WISE â'r nod o ddatblygu cynnyrch pren gwres-driniedig ardystiedig sy'n addas ar gyfer cymwysiadau mewn gwaith adeiladu cynaliadwy. Ar y cychwyn gwnaeth Rhwydwaith WISE astudiaeth gwmpasu gan gyflwyno'r prif ymagweddau masnachol at addasu thermal, y dulliau ar gyfer eu profi neu fesur, a'r gofynion ynghylch safonau neu ardystio.

Hefyd archwiliodd y cydweithredu parhaus seicoleg y defnyddwyr ynghylch cynhyrchion cynaliadwy yn y farchnad breswyl gwerth uchel a chynorthwyodd wrth ymchwilio a datblygu'r cynnig brand i'r farchnad hon.

Yn sgil y gwaith hwn lanswyd yr amrediad newydd o gynhyrchion ar 'Ddydd Ynys Môn' yn Nhŷ'r Cyffredin yn San Steffan a derbyniwyd y cwmni a'i amrediad o gynhyrchion yn dda iawn.

Meddai Emlyn Williams, "Ar y cychwyn es i at Rwydwaith WISE gyda her dechnegol ond wedyn maen nhw wedi helpu fy musnes mewn ffyrdd doeddwn i byth wedi'u dychmygu; brandio moesegol, help wrth ymgeisio am gymorth ariannol a rhwydweithio...mae'r rhestr ond yn mynd ymlaen."

Sustainable Welsh wood at the heart of your home

Emlyn Williams, Managing Director of Hiraeth™ approached WISE Network with the aim of developing a certified heat-treated timber product suitable for applications in sustainable construction. WISE Network initially undertook a scoping study, introducing the main commercial approaches to thermal modification, the methods for testing or quantifying them, and the requirements for standards for certification.

The ongoing collaboration also investigated the consumer psychology of sustainable products in the high value residential market and assisted in the research and development of the brand proposition to this market.

Following this work the new product range was launched on 'Anglesey Day' at the House Of Commons in Westminster and both the company and its product range have been very well received.

Emlyn Williams said, "I initially approached WISE Network with a technical challenge but they have subsequently helped my business in ways I had never imagined; ethical branding, funding application support and networking...the list just goes on."



Superfix

Superfix

Niwtraseiticolion biolegol-weithredol ar gyfer anifeiliaid anwes

Mae Superfix yn cynhyrchu cynhyrchion niwtraseiticol ar gyfer anifeiliaid. Yn aml mae niwtraseiticolion yn echdyniadau sy'n deillio o blanhigion sy'n cynnwys lefel uchel o gyfansoddion biolegol-weithredol penodol. I'r cyd-farchnad anifeiliaid, yr her yw sicrhau bod y cyfansoddyn "gweithredol" yn aros heb ei newid yn gemegol yn ystod prosesu.

Yn ystod trafodaethau cychwynnol rhwng Superfix a chynhyrhydd bwyd anifeiliaid mawr, cododd y cwestiwn a fyddai'r cyfansoddyn "gweithredol" yn aros yn fiolegol-weithredol ar ôl y wres-driniaeth angenrheidiol o'r cynnyrch. Dadansoddodd tîm Rhwydwaith WISE yr echdyniad ei hunan a'r cynnyrch ill dau er mwyn sicrhau nad yw'r cyfansoddyn "gweithredol" wedi lleihau o ran tewychiad neu nad yw cyfansoddion eraill yr echdyniad wedi cynhyrchu is-gynhyrchion annymunol posibl. Gan na ddaethpwyd o hyd i newidiadau, aeth y cynhyrchiant ymlaen gyda'r ddau barti'n hyderus y byddai gwerth ychwanegol i echdyniad y planhigyn.

Sylwodd Dr Carol Michael o Superfix "Mae gweithio gyda Rhwydwaith WISE wedi cynyddu ein hyder yn ein cynhyrchion, a thrwy hynny wedi bod o les i'n twf posibl fel cwmni."



Bio-active nutraceuticals for pets

Superfix produces nutraceutical products for animals. Nutraceuticals are often plant-derived extracts that contain a specific biologically-active compound in high concentration. For the companion animal market, the challenge is to assure that the "active" compound remains chemically unchanged during processing.

During initial negotiations between Superfix and a large animal feed producer, the question arose whether the "active" would remain biologically-active after the necessary heat-treatment of the product. The WISE Network team analysed both the extract itself and the product in order to ascertain that the "active" neither reduced in concentration nor that other components of the extract produced potentially undesirable side-products. As no changes were detected, production went ahead with both parties confident in the added-value of the plant extract.

Dr Carol Michael of Superfix commented that "Working with WISE Network has increased our confidence in our products, thus benefiting our potential growth as a company."

Cylch Cylch

Canolbwyntiau Aildddefnyddio Cymunedol

Mae Cylch yn rhwydwaith ailgylchu gymunedol yng Nghymru yn cynnwys aelodau o sefydliadau aildddefnyddio cymunedol sy'n darparu cyfleoedd cymdeithasol ac economaidd i reoli adnoddau o wastraff. Mae ymgynghorydd dewisol Rhwydwaith WISE a Chylch wedi archwilio Strategaeth Aildddefnyddio Cymru Cylch i gyflenwi'r cyfle i greu Canolbwyntiau Aildddefnyddio Cymunedol ledled Cymru, yn benodol ar gyfer tecstiliau, eitemau trydanol a dodrefn.

Y nod oedd datblygu dealltwriaeth fanwl o ffrydau deunydd yng Nghymru a deall y farchnad am aildddefnyddio ac ailgylchu cynhyrchion. Gwnaeth Tim Ymchwil Aildddefnyddio Rhwydwaith WISE ddadansoddiad data ac ymchwil i'r farchnad o gwmpas llifau deunydd ac ati, gan gyflwyno adroddiad yn adnabod y cyfleoedd allweddol i aildddefnyddio ar gyfer y sector cymunedol a oedd yn cynnwys mapiau ffrwd, dadansoddi'r farchnad, a datblygu set gyntaf o opsiynau ar gyfer datblygu capasiti. Yna crëodd Tim GIS Rhwydwaith WISE fapiau o'r data gan gynnwys lleoliad y Canolbwyntiau Aildddefnyddio posibl a chapasiti cyfredol aelodau Cylch.

Community Reuse Hubs

Cylch is a community recycling network in Wales made up of members from community reuse organisations providing social and economic opportunities to manage resources from waste. WISE Network and Cylch's selected consultant have explored Cylch's Wales Reuse Strategy to deliver the opportunity for creating Community Reuse Hubs across Wales, specifically for textiles, electrical goods and furniture.

The goal was to develop a detailed understanding of material streams in Wales and understand the market for reuse and recycling products. WISE Network's Reuse Research Team successfully carried out data analysis and market research around material flows etc, and presented a report identifying the key opportunities for reuse for the community sector was created which included stream maps, market analysis, and development of first set of options for capacity development. WISE Network's GIS Team then created maps of the data including location of potential Reuse Hubs and current Cylch members' capacity.



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