



#### **AEGIS**

#### A Multinational Consortium for Managing GHG emissions in Asia

Professor Andy Whiteley & Dr Suman George





**AEGIS** aims to reduce GHG emissions during increased rice production by researching the best production based mitigation strategies, monitor GHG outputs under these conditions, form international quality training networks and embed policy FOR INTEGRATED SULLA specialists.

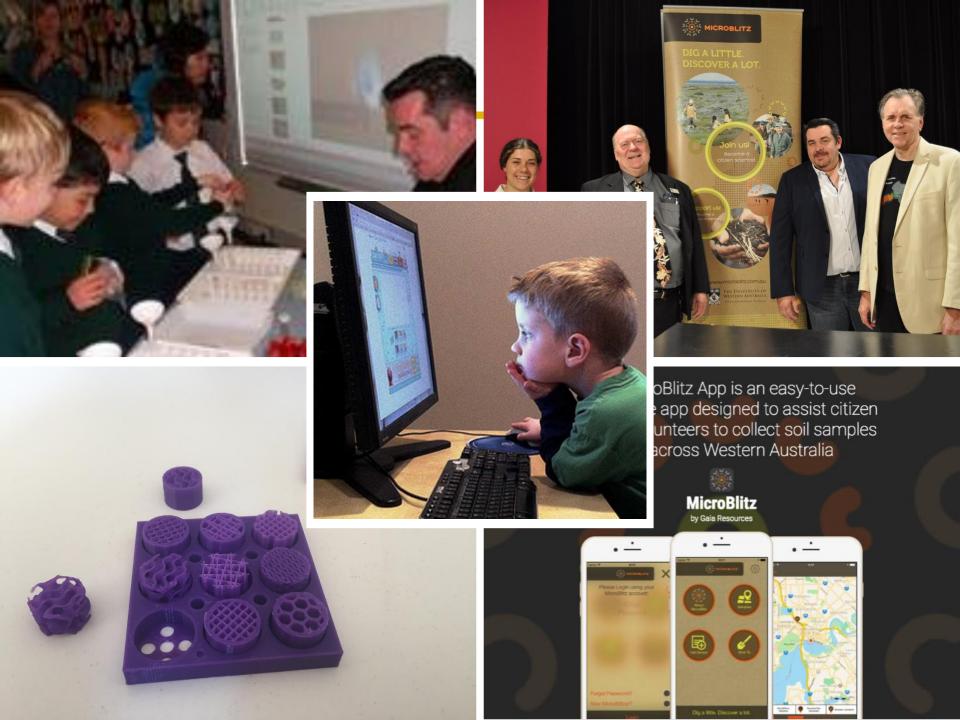




#### Multiscale Discovery Science

Evidence Based Policy Development

Training Networks for the Next Generation













IRRI











Strategic Policy Partners

Strategic Outreach Partners





Food and Agriculture Organization of the United Nations





#### Reducing emissions and enhancing sinks: Addressing climate mitigation and monitoring challenges in S.E. Asia

AEGIS (Action on Emission of GHGs for Integrated Sustainability) Research

Consortium

Developing strategic research collaboration

Preliminary meeting 6th and 7th March 2018 Bangkok





Food and Agriculture Organization of the United Nations

## Action On Emissions of GHGs for Integrated Sustainability



























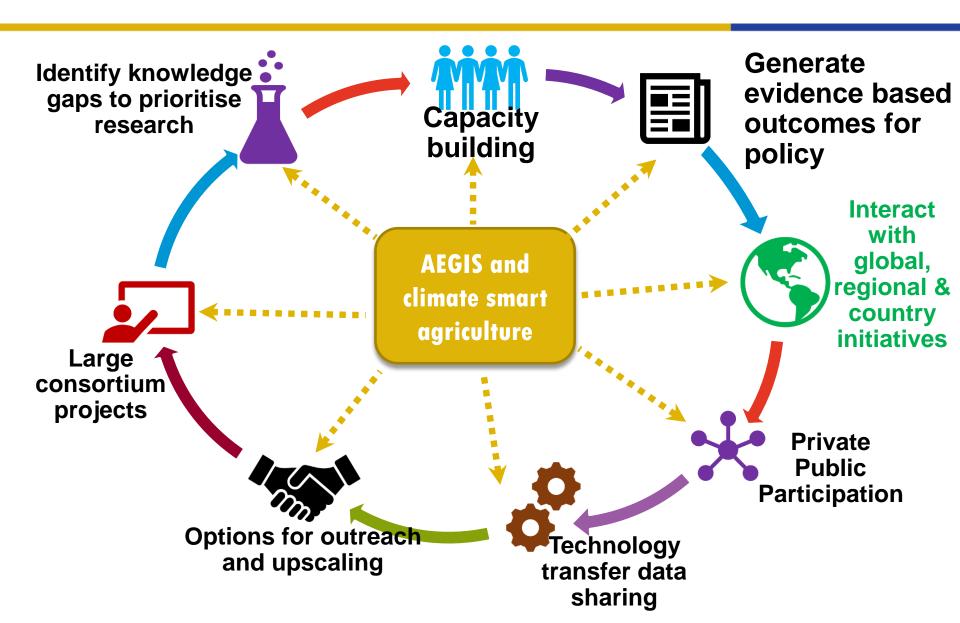




**AEGIS** aims to fill knowledge gaps for accurately quantifying GHG emissions when implementing some of the most promising mitigation options.

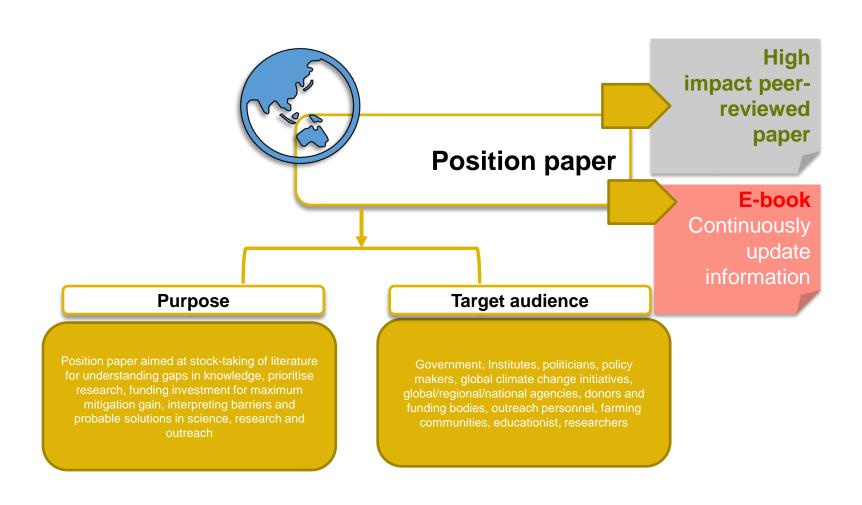






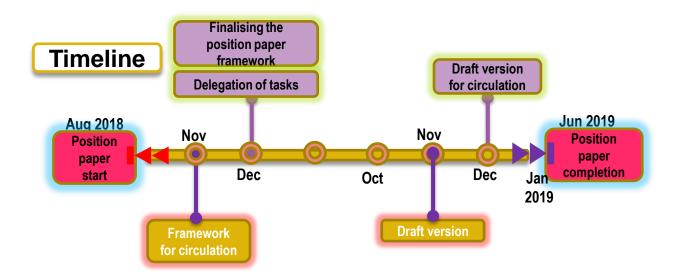
#### POSITION PAPEL





#### POSITION PAPEI

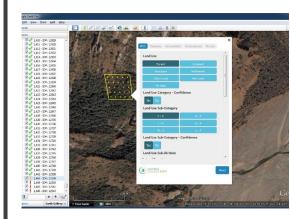




#### Collect-Earth & SEPAL







Open-Source, Free Tools for Land Cover Data Collection, Analysis and Reporting

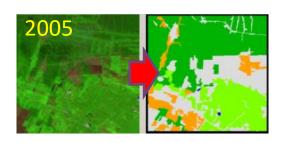




#### REGIONAL



### MONITORING IPCC Equation for Estimating Emissions & Removals











	FL Viet evergreen	FL Moist evergreen	FL Moist semi-deciduous	FL South-east subtype	FL North-west subtype	FL North-west subtype	FL Dry semi-deciduous	Agricultural land	Savarrya	Shrub Ticket	Settlements	Wetlands	Otherland	Unclassified	Final Area
FL Wet evergreen	51														5
FL Moist evergreen		42													4
FL Moist semi-deciduous			60												5
FL South-east subtype				52											
FL North-west subtype					12										1
FL North-west subtype			_			2	_		_						2
FL Dry semi-deciduous							25		2						
Agricultural land	5	2				2	3	1							1
Savanna			1			3	1		20						2
Shrub Ticket					1					12					1
Settlements						1		10			25				3
Wetland									0			2			
Otherland								5					25		3
Unclassified								9						10	-1
Initial Area	56	44	61	52	13	8	29	25	22	12	25	17	25	10	
Net change (&=T0-T1)	-6	-2	-1	0	-1	-4	-2	-12	3	1	11	-15	5	9	1

Area change data from satellite remote sensing

GHG stock change data from field-based inventory Inventory of GHG emissions

ACTIVITY DATA

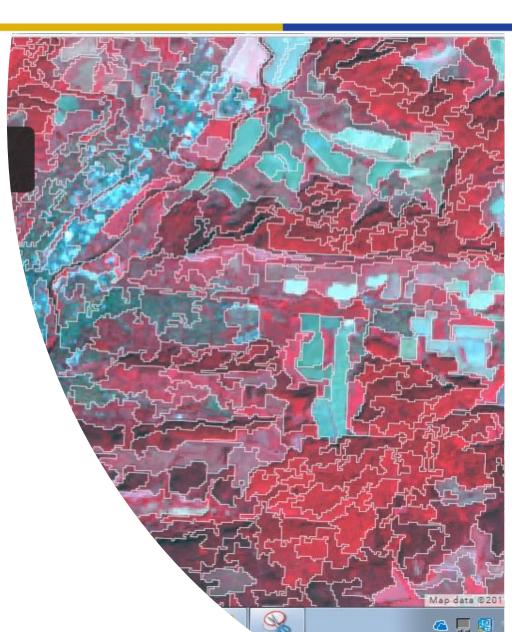
**EMISSION FACTOR** 

**EMISSIONS ESTIMATE** 

#### SEPAL: Automatic class'n is faster



- Automatically classifies the image
- Faster
- Consistent



#### REGIONAL



## MONITORING Collect-Earth and SEPAL

#### Proof of concept

Australian land use classification Watershed in SE Asia

Australian Research Council Funding
APN Funding





## LANDSCAPE MONITORING pt

WESTERN AUSTRALIA

Deciphering GHG
emissions from rice fields
on an ecosystem to
molecular scale for
sustainable GHG
mitigation







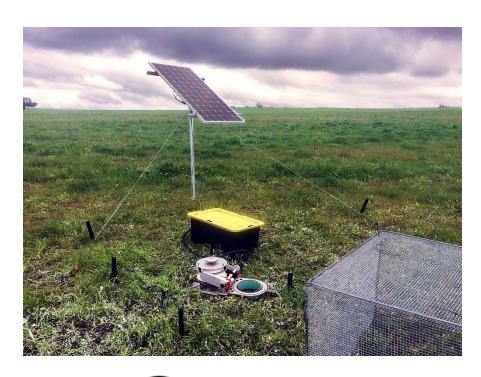


## LANDSCAPE MONITORING



Evaluating spatial variation in CH<sub>4</sub>, N<sub>2</sub>O, CO<sub>2</sub> flux on real time basis







#### LANDSCAPE

#### WESTERN AUSTRALIA

## MONITORING High Molecular Throughput analysis









#### **CAPACIT**



# BUILDIN Training Network















Food and Agriculture Organization of the United Nations



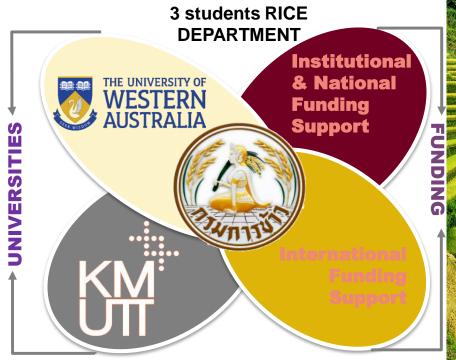






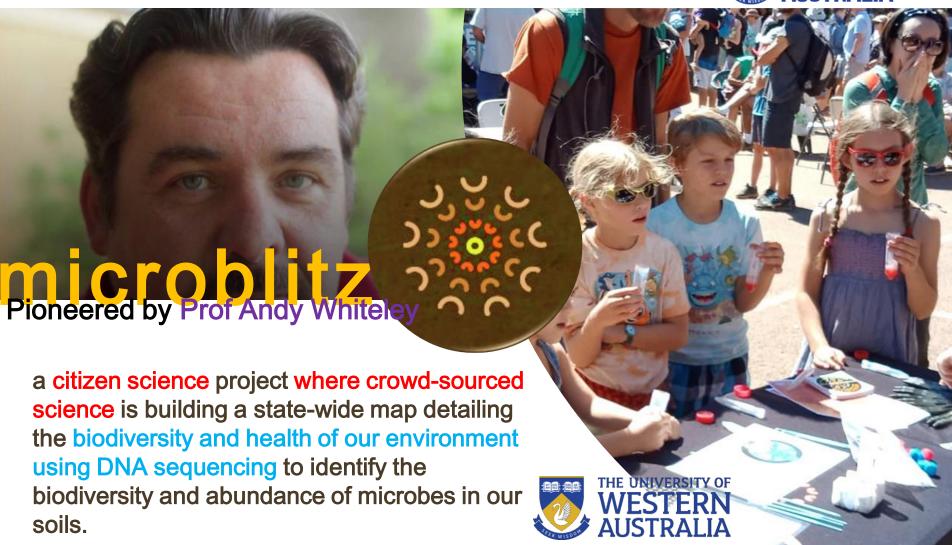


**Training Network** 



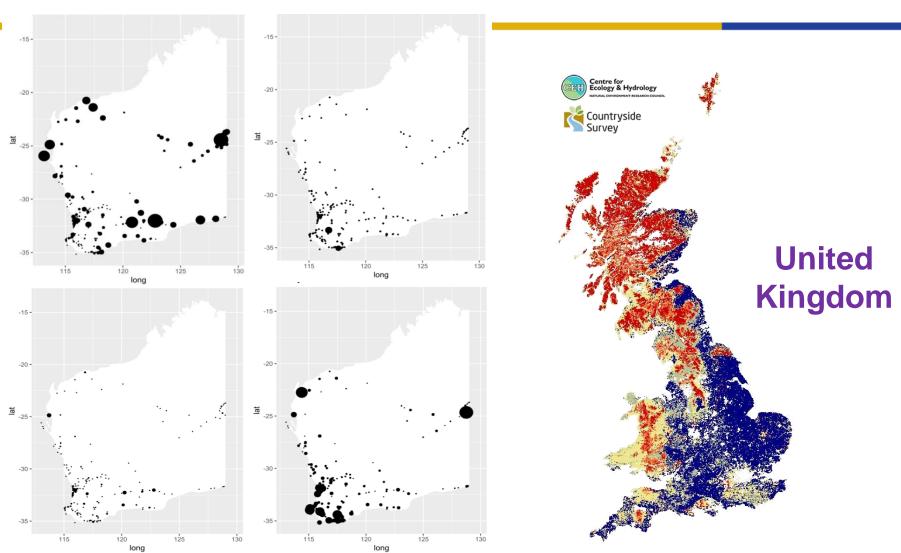






#### **Topsoil microbial diversity**





**Western Australia** 





using the power of citizen science to build a region-wide map detailing the biodiversity and health of the environment using soil microbial DNA sequencing

Open Labs in IRRI, UWA, RD



# LARGE CONSORTIUM PROJECTS

**Funding Network** 

Country Regional
CLIMATE SMART
RESEARCH PROJECTS
Corporate
International Corporate

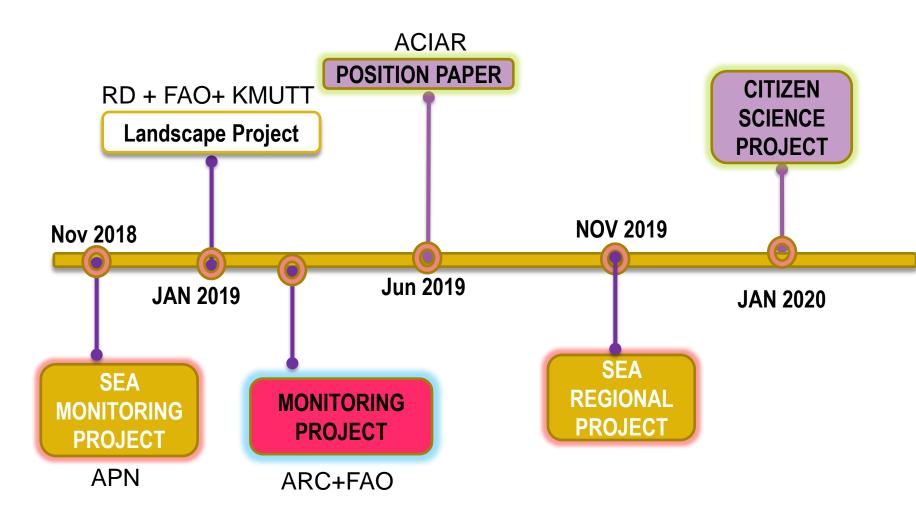
COP21 · CMP11

PARIS 2015

UN CLIMATE CHANGE CONFERENCE

## TIMELINE of ACTIVITY







Combined real-time monitoring systems CH<sub>4</sub>, N<sub>2</sub>O, CO<sub>2</sub>

Citizen science for local deployment

Monitoring accuracy will be key to check countrywide/regional implementation of emission targets

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For further discussions and collaborations