

Analysis of the performance and future directions of the biodiversity offsets market in NSW

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Biodiversity Offsets Scheme (BOS)



The BOS is a market-based instrument which relies on market forces, rather than direct management or regulation, to achieve conservation outcomes.



The BOS generates market signals that are intended to positively influence market participants' behaviour to improve biodiversity outcomes.

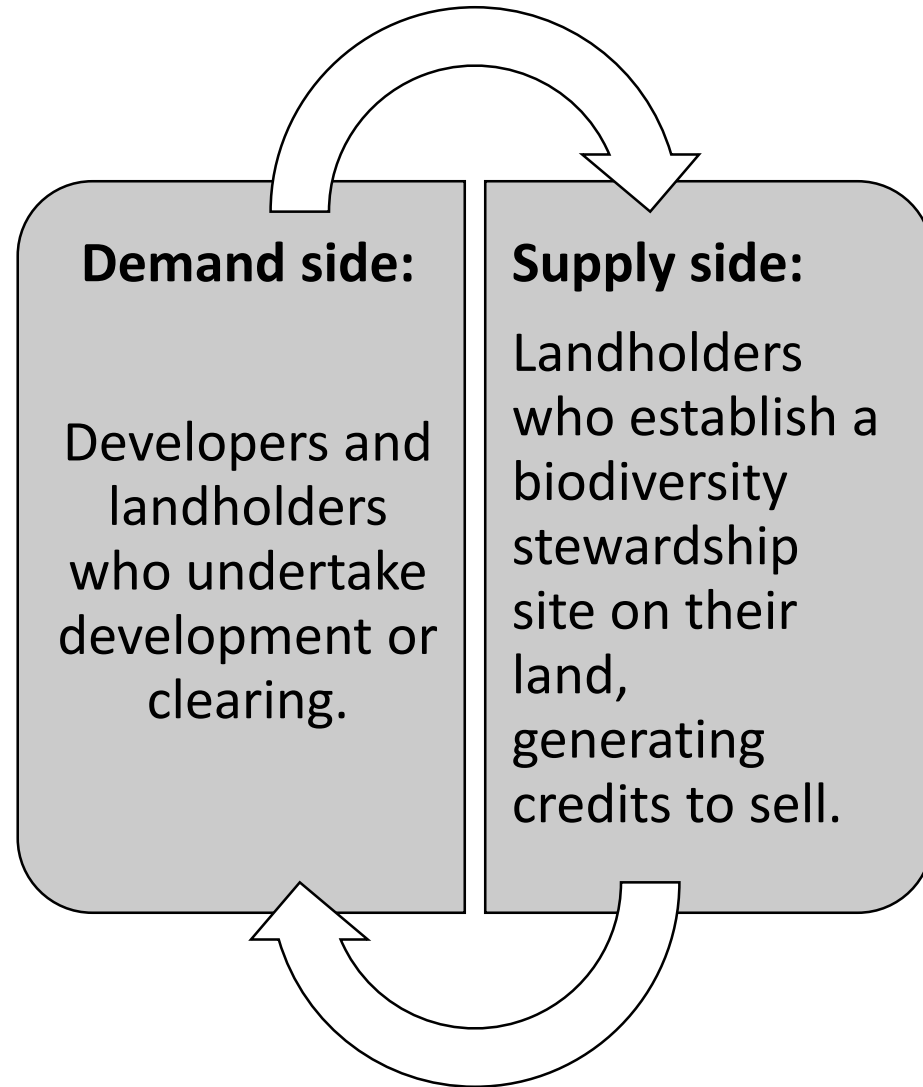
The BOS legislatively mandates that firms or individuals financially compensate for any significant adverse impact of development on biodiversity. Financial compensation can be provided through:



- ✓ the purchase of biodiversity credits (created by landholders willing to grow additional biodiversity on their properties),
- ✓ by developers growing their own additional biodiversity, or
- ✓ by a developer making a payment into the Biodiversity Conservation Fund (BCF) operated by the Biodiversity Conservation Trust (BCT).



Biodiversity offsets market: simple scheme









Biodiversity offsets market: an acceptable definition

The biodiversity offsets market refers to the institutional framework under which developers, landholders, governments agencies, such as the BCT, and other participants carry out either market actions (basically for the purchase/sale of biodiversity credits in the market and that include remuneration or profit) or non-market actions (for self-offsetting and/or philanthropic purposes, where these activities do not necessarily generate any profit.)



What is the economic basis of the biodiversity offsets market?

-  A biodiversity credit is a common measure for assessing ecological gains (at biodiversity stewardship sites) and losses (impacts of development or clearing.)
-  A biodiversity credit is used to satisfy trading purposes in the offsets market.
-  Once created, biodiversity credits can be traded many times before they are retired (to meet an offset obligation).
-  We can identify a price equilibrium as an outcome of a market economy in which each agent in the economy (i.e., each developer and credit holder) is doing as well as he can given the actions of all other agents.



The former BioBanking program



The NSW BOS commenced on 25 August 2017 and is an extension of the previous NSW Biodiversity Banking and Offsets Scheme ('the BioBanking program'), which was implemented in 2008. There have been a number changes including:

- a) Replacement of the BioBanking Assessment Methodology (BBAM) with the Biodiversity Assessment Methodology (BAM).
- b) Replacement of BioBanking Agreements with Biodiversity Stewardship Agreements.
- c) Establishment of the Biodiversity Conservation Trust.



The following data refers exclusively to the biodiversity credits transferred under the BioBanking program.

Biodiversity Offsets Market Monitoring: Spot Price Index





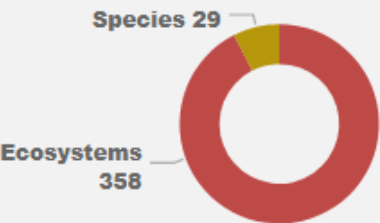
NSW Biodiversity Offsets Market - Quick Report System

Numer of market transactions

387

Average transactions per month

32

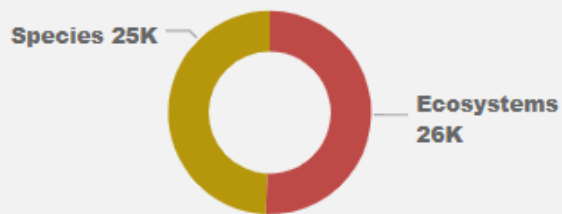


Number of credits transferred

51.1K

Average credits per month

4257

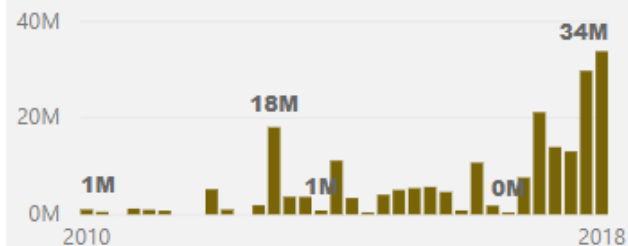


Total market value (\$AUD)

211.3M

Average SAUD per month

18M



Date

31/05/2010 26/09/2018

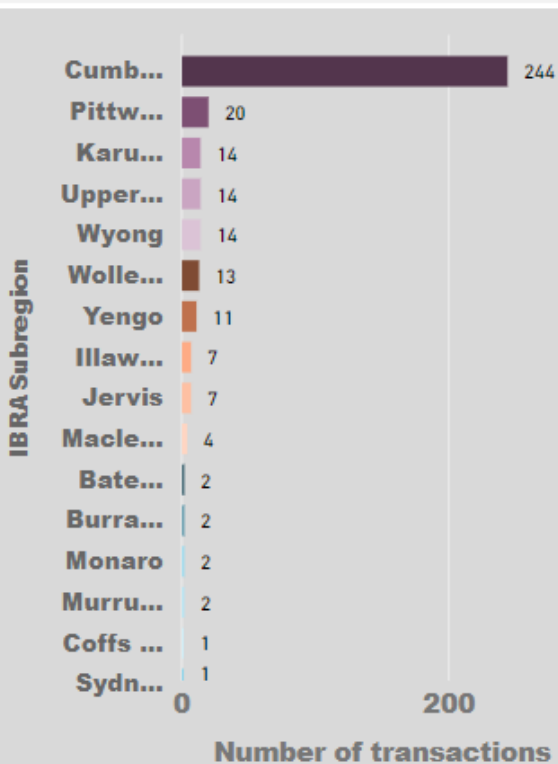


Biodiversity

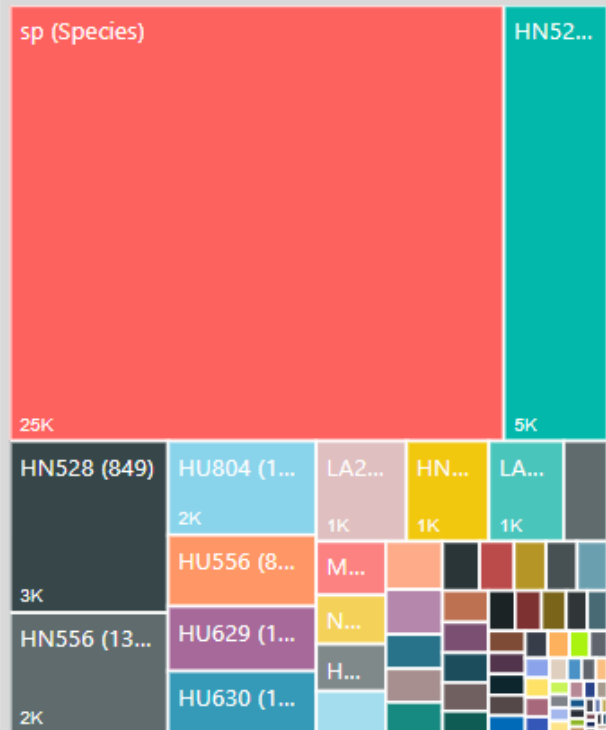
- Select All
- Ecosystems
- Species

IBRA Subregion

- Select All
- Bateman
- Burratorang
- Coffs Coast and Escarpment
- Cumberland
- Illawarra
- Jervis
- Karuah Manning
- Macleay Hastings
- Monaro
- Murrumbateman
- Pittwater
- Species credits
- Sydney Cataract
- Upper Hunter
- Wollemi
- Wyong
- Yengo



Number of credits traded - Species and by BVT (PCT...)



Market price

Ecosystems

8,034.60

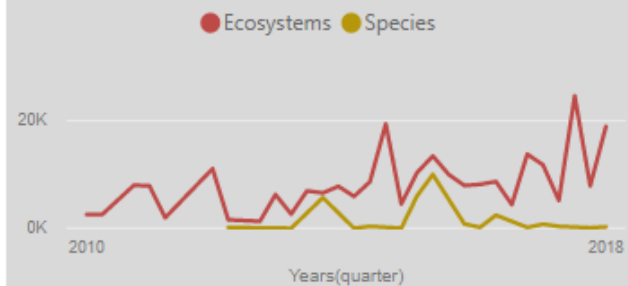
Average of Price per credit weighted by Number of credits ...

Species

136.41

Average of Price per credit weighted by Number of credits ...

Trend - Weighted average price per credit





NSW Biodiversity Offsets Market - Quick Report System

Ecosystems

Numer of market transactions

358

Average transactions per month

30

Number of credits transferred

25.9K

Average credits per month

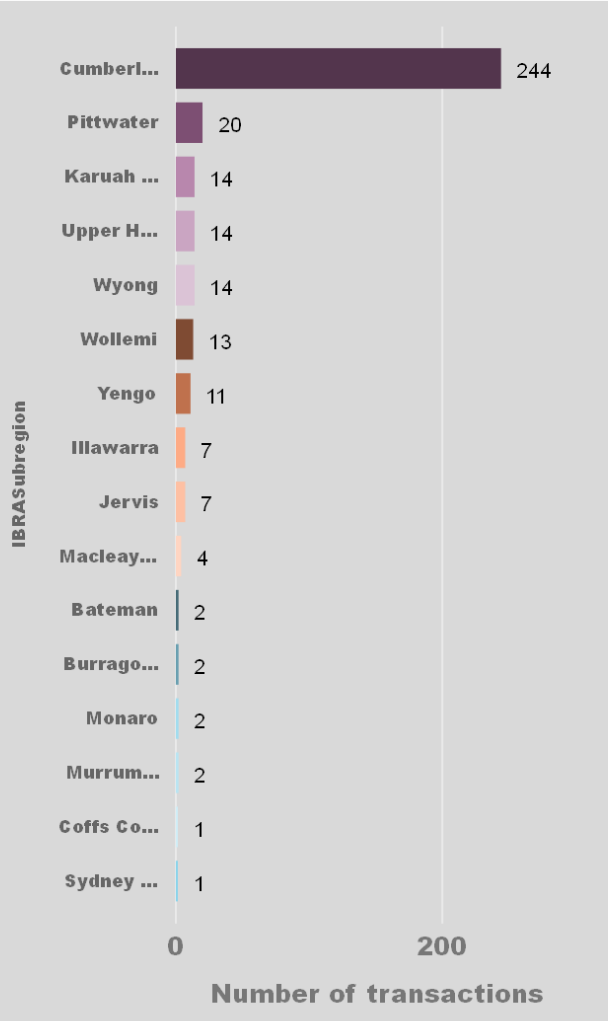
2156

Total market value (\$AUD)

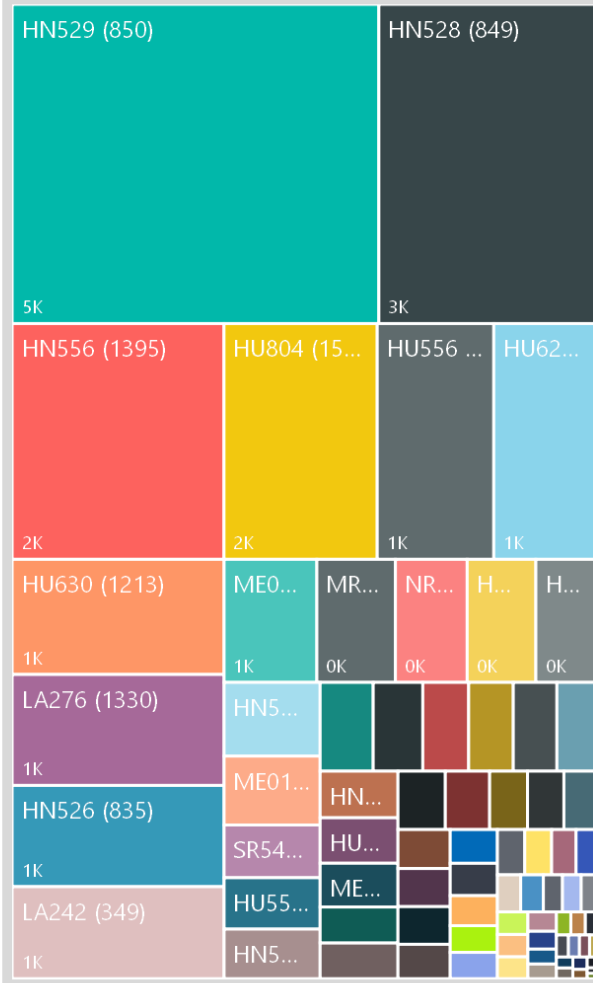
207.8M

Average \$AUD per month

17.3M



Number of credits traded - by BVT (PTCID)



Market price

Ecosystems

8,034.60

Average of Price per credit weighted by N...

35,000.00

Max of Price per credit

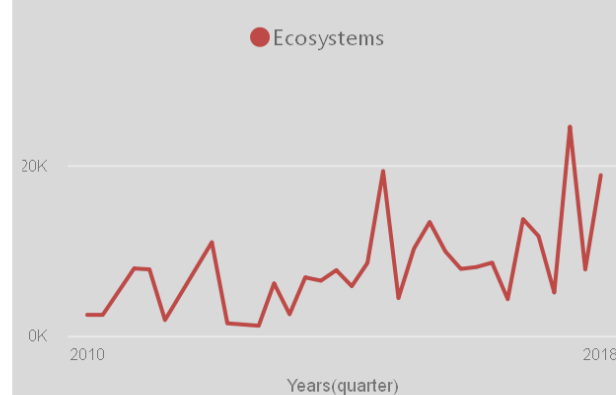
795.65

Min of Price per credit

6,462.57

Standard deviation of Price per credit

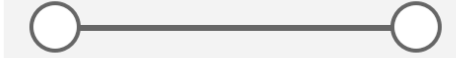
Trend - Weighted average price per credit



Date

5/31/2010

9/3/2018



Ecosystem ID

Select All

HN524 (830)

HN526 (835)

HN528 (849)

HN529 (850)

HN538 (877)

HN542 (883)

HN556 (1395)

HN564 (1081)

HN566 (1083)

HN586 (1181)

HN587 (1183)

HN596 (1237)

HN604 (1281)

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IBRA subregion

Select All

Bateman

Burragarang

Coffs Coast and Escarpment

Cumberland

Date of data collection: 30/09/2018 14:03 hrs.





Numer of market transactions

244

Average transactions per month

20

Number of credits transferred

12.1K

Average credits per month

1005

Total market value (\$AUD)

162.7M

Average SAUD per month

13.6M

Date

31/05/2010

3/09/2018

Ecosystem ID

Select All

HN524 (830)

HN526 (835)

HN528 (849)

HN529 (850)

HN538 (877)

HN556 (1395)

HN564 (1081)

HN586 (1181)

HN596 (1237)

HN604 (1281)

HN606 (1284)

ME004 (724)

ME017 (830)

ME018 (835)

ME019 (850)

IBRA SUBregion

Select All

Bateman

Burragorang

Coffs Coast and Escarpment

Cumberland

Illawarra

Market price

Ecosystems

13,484.73

Average of Price per credit weighted by Nu...

35,000.00

Max of Price per credit

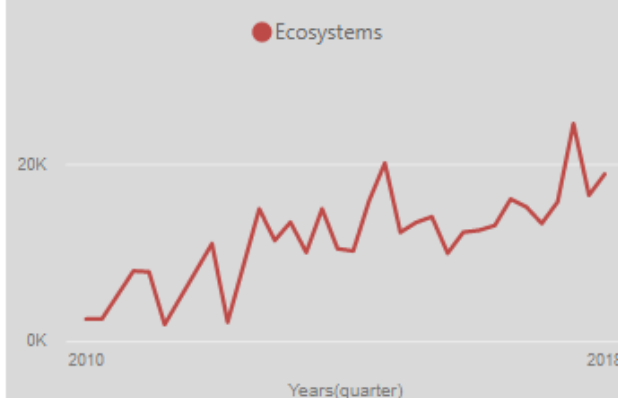
1,581.00

Min of Price per credit

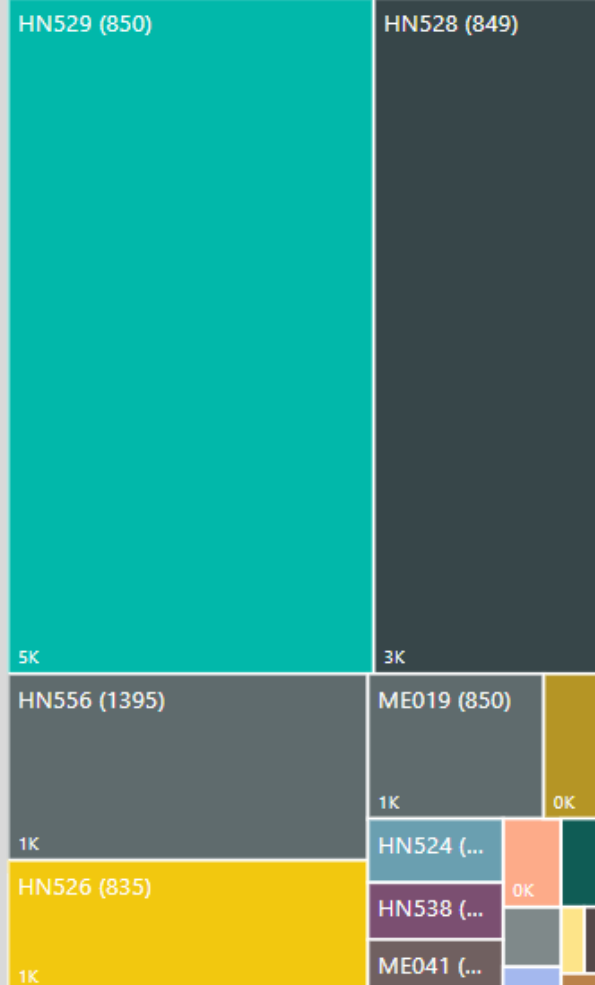
5,645.68

Standard deviation of Price per credit

Trend - Weighted average price per credit



Number of credits traded - by BVT (PTCID)



IBRA Subregion

Cumberland

244

0 200

Number of transactions



NSW Biodiversity Offsets Market - Quick Report System

Species

Numer of market transactions

29

Average transactions per month

3

Number of credits transferred

25.2K

Average credits per month

2522

Total market value (\$AUD)

3.4M

Average \$AUD per month

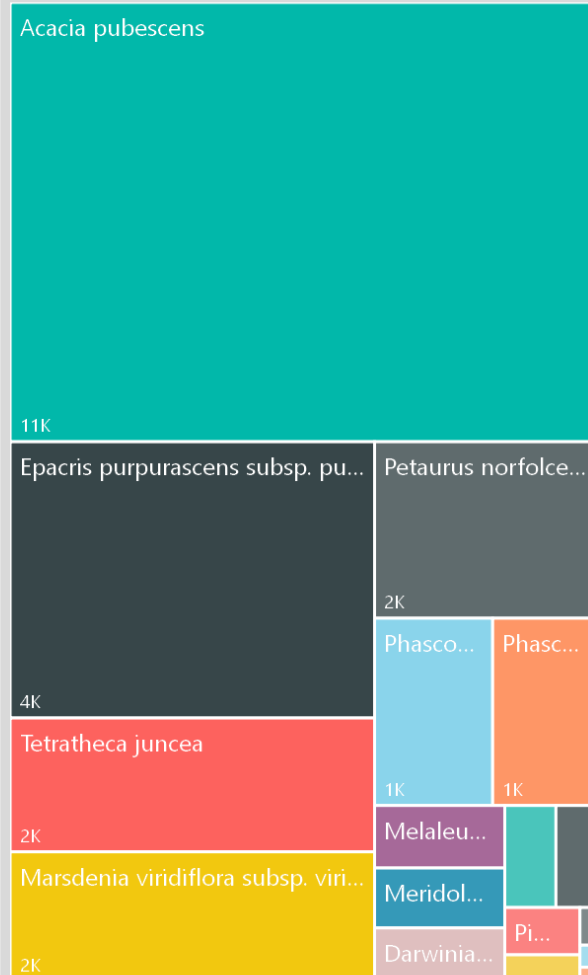
344K

Number of Transactions - by Species

Species Scientific Name



Number of credits traded - Species



Market price

Species

136.41

Average of Price per credit weighted by N...

10,000.00

Max of Price per credit

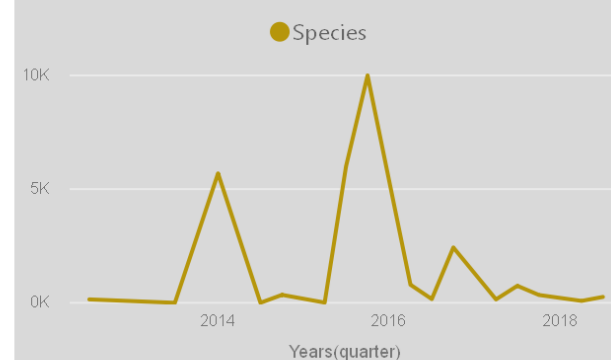
1.00

Min of Price per credit

2,501.53

Standard deviation of Price per credit

Trend - Weighted average price per credit



Date

9/28/2012

9/26/2018

Scientific Name

Select All

- Acacia pubescens
- Callocephalon fimbriatum
- Darwinia biflora
- Epacris purpurascens subsp. pu...
- Litoria aurea
- Marsdenia viridiflora subsp. viric...
- Melaleuca deanei
- Melaleuca groveana
- Meridolum corneovirens
- Petaurus norfolcensis
- Phascogale tapoatafa
- Phascolarctos cinereus
- Pimelea spicata
- Pseudophr...
- Sminthopsis leucopus
- Tetratheca juncea
- Varanus rosenbergi

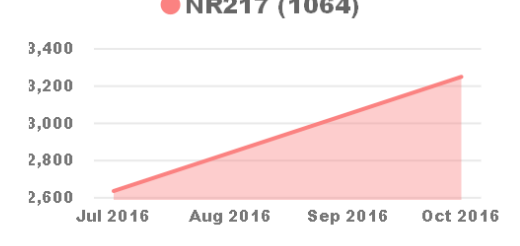
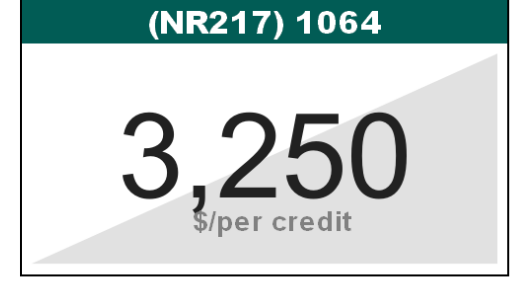
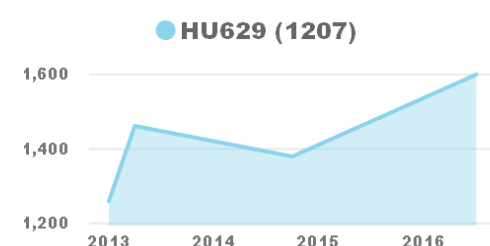
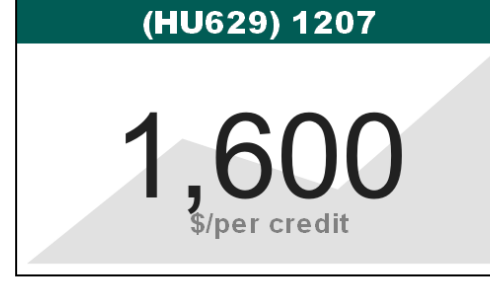
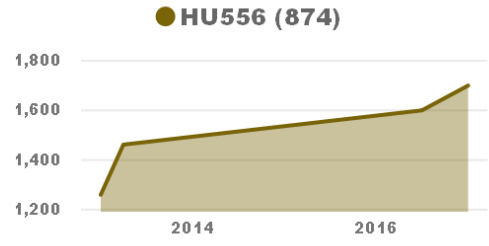
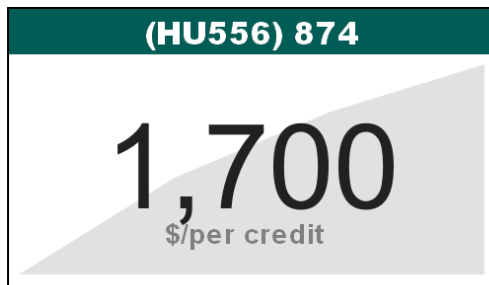
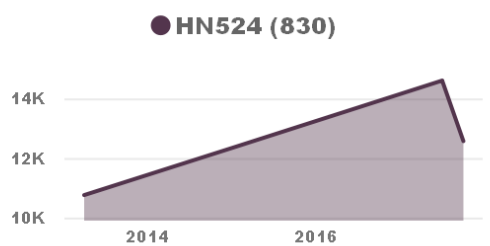
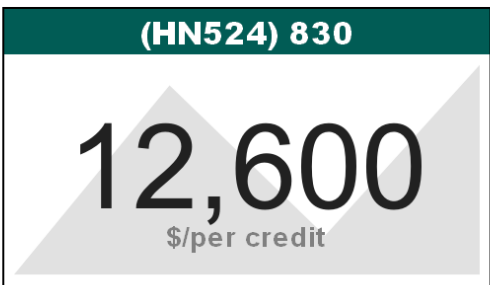
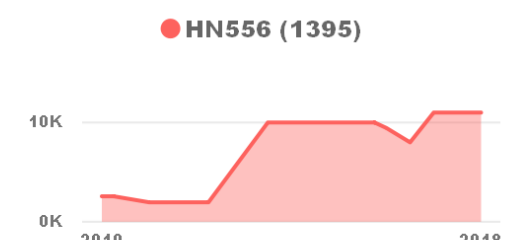
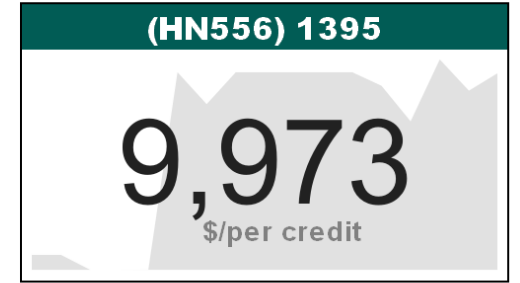
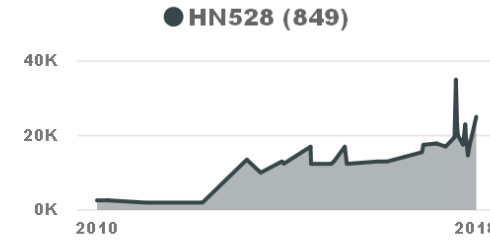
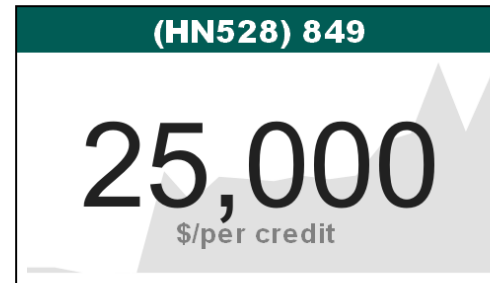
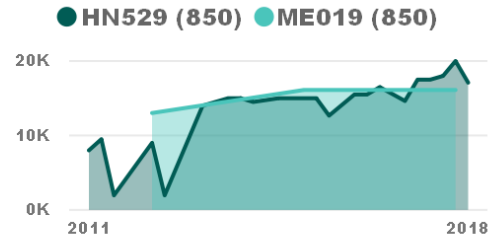
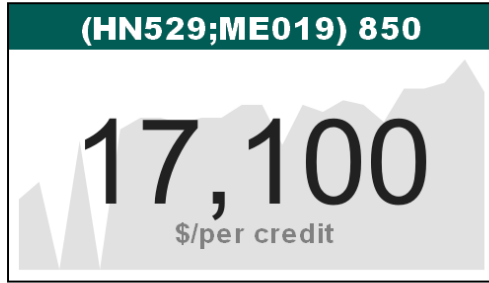
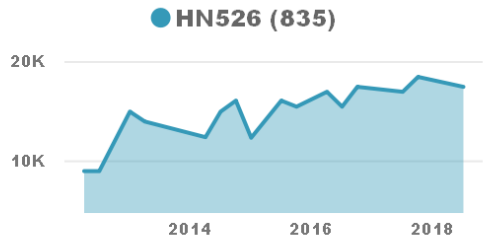
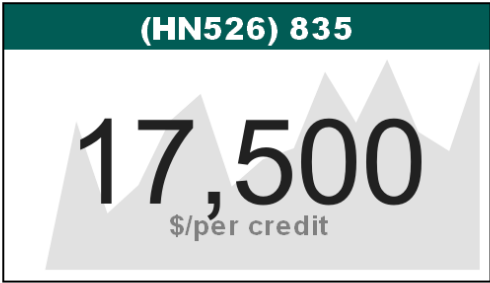
Date of data collection: 30/09/2018 14:03 hrs.





NSW Biodiversity Offsets Market - Spot Market Price

Ecosystems





NSW Biodiversity Offsets Market - PCTID Balance

5/4/2010

7/31/2018

NAME-PTCID	Cancelled	Committed	Issued	Pending	Retired	Total
	246					246
Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion			2523		199	2722
Black Booyong - Giant Stinging Tree - Rosewood - Moreton Bay Fig lowland subtropical rainforest of the lower North Coast				241		241
Black Booyong - Rosewood - Yellow Carabeen subtropical rainforest of the NSW North Coast Bioregion			64			64
Blackbutt - Narrow-leaved White Mahogany shrubby tall open forest of coastal ranges, northern Sydney Basin Bioregion					354	354
Blackbutt - Needlebark Stringybark shrubby open forest on coastal sands of the NSW North Coast Bioregion					90	90
Blackbutt - Smooth-barked Apple shrubby open forest on coastal sands of the		78	594			672
Total	246	2301	10707	60665	3331	31895
						109145

Number of credits available (*issued)
61K

Number of credits generated
109K

Number of credits retired
32K

Number of credits committed
11K

Number of credits cancelled
2301

Number of credits pending
3331

PCTID

- Select All
- (Blank)
- CW177
- CW180
- CW202
- CW209
- HN514
- HN523
- HN524
- HN526
- HN528
- HN529
- HN531
- HN537
- HN538

Vegetation Formation

- Select All
- (Blank)
- DSG
- DSS
- FRW
- FWW
- GLD
- GRW



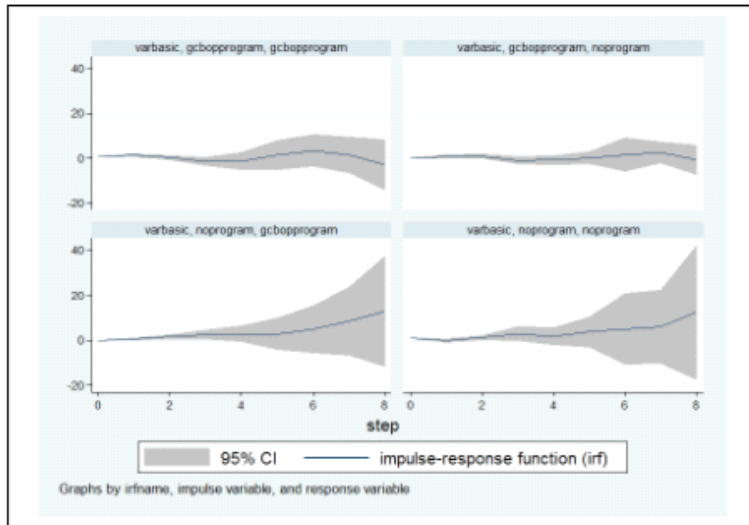
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Future directions

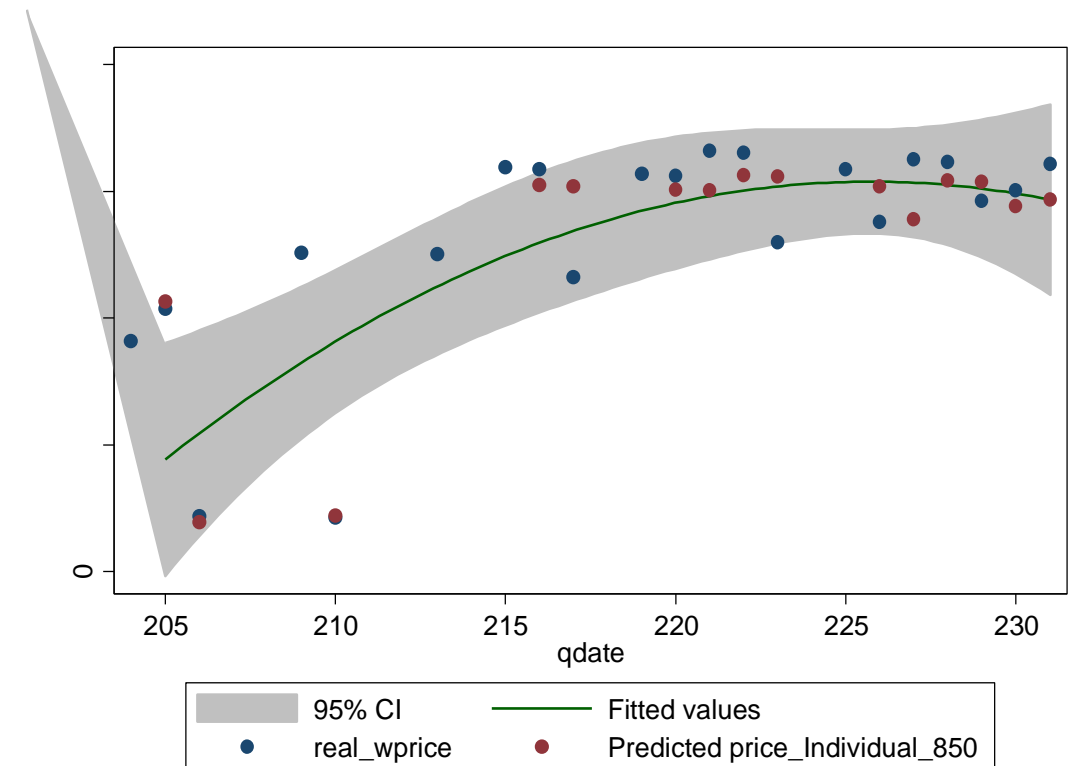


Continuing using advanced econometric techniques to uncover interaction between the biodiversity offset market and other key economic variables.



Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gcbopprogram	noprogram	9.5278	3	0.023
gcbopprogram	ALL	9.5278	3	0.023
noprogram	gcbopprogram	14.654	3	0.002
noprogram	ALL	14.654	3	0.002

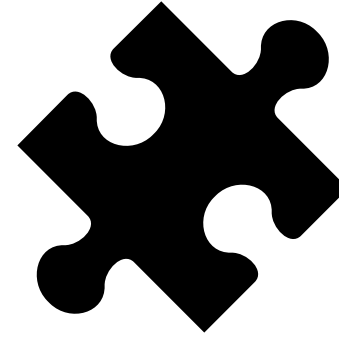
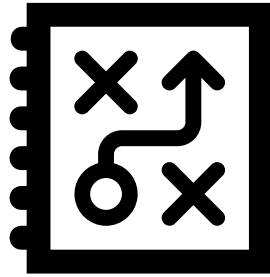
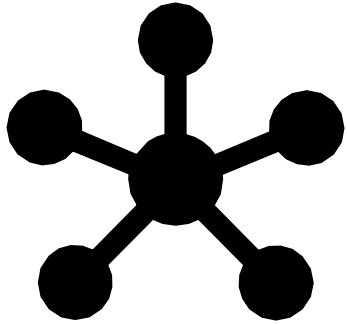




Future directions



Identify and manage any 'distortion' in the biodiversity offsets market.





Future directions



Integrate the biodiversity balance derived from the BOS into the NSW System of Environmental Economic Accounting (SEEA)



Analysis of the performance and future directions of the biodiversity credit market in NSW

Thank you

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