Data Article

Dataset of biomass waste of rice paddies and forest sectors supporting the assessment of the potential for bioenergy production in Taiwan

Keng-Hao Chang a, Kuo-Ren Lou a, **, Chun-Han Ko b, *

a Department of Management Sciences, Tamkang University, Taipei 25137, Taiwan
b School of Forest and Resources Conservation, National Taiwan University, Taipei, 10617, Taiwan

ABSTRACT

Assessing the biomass-based bioenergy production potential of nations is heavily dependent on the import source of fossil fuels. Taiwan can alleviate its fossil fuel dependency and greenhouse gas emissions. Key information (including published statistics and calculations) on biomass waste production from rice paddies in Taiwan considering the full production of available rice paddies was included in this study. In addition, key information on biomass waste production from forest sectors in Taiwan considering enhanced domestic production and the imported sources of harvested wood products (HWP) was also included. The volumes of decayed HWP could be used to predict available biomass waste for bioenergy production. The results of this study assist with the recent evaluation of the potential of the most prevailing available sources of biomass waste, rice paddies and forest sectors, for bioenergy generation, e.g. for more insight please see “Potential of Bioenergy Production from Biomass Wastes of Rice Paddies and Forest Sectors in Taiwan” [1].

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The data presented in this article are employed to facilitate the analysis and prediction of the research article “Potential of Bioenergy Production from Biomass Wastes of Rice Paddies and Forest Sectors in Taiwan” [1] from 2017 to 2065. Governmental statistic data of this article are from 1990. Governmental statistics for rice straw and rough rice production [2], listed by Table 1, were employed to estimate biomass wastes of rice paddies. Table 2 lists historical data of domestic logging volumes and estimation of biomass waste from domestic logging in Taiwan [3]. Table 3 lists the tax codes of Customs Administration for each respective item of wood products [4] for further calculation and prediction of harvested wood products (HWP) contribution of biomass waste. Table 4 lists statistics on domestically produced HWP from 1990 to 2016. The first data column of Table 4, sawn timber and firewood production, is compiled from Forestry Bureau [3]. Data from other later columns for statistics for domestically produced HWP are of other items published from the Ministry of Economic Affairs [5]. Table 5 lists imported HWP data from the Customs Administration [4]; tonnage data of subcategory items of wood panels were converted from square meters and thickness of plywood. Table 6 lists the exported HWP data from all respective items listed and published by Customs Administration [4].
Table 7 lists overall biomass tonnage of imported and exported HWP data, derived from the summation of data from Tables 5 and 6. Table 8 lists carbon mass overall biomass tonnage of imported and exported HWP data, using IPCC methodology [6] and derived from summation of data from Tables 5 and 6. Table 9 lists carbon inflow statistics of HWP from 2007 to 2016, summarizing data from Tables 7 and 8. Carbon inflow statistics of HWP serve as the base for estimating biomass waste of forest sectors by IPCC method [6] for future scenario [1].

2. Experimental design, materials, and methods

2.1. Biomass waste from rice paddy

Governmental statistics for rice straw and rough rice production [2], listed by Table 1, were employed to estimate biomass wastes of rice paddies. Historical and converted data on rice husks and rice straw in Taiwan [2] are listed in Table 1. Original data are to the oven dried values converted from published data [2], where rice husks and rice straw are respectively 20% and equal weight of produced rice. Converted values, as listed in row 3 and 4, were the conversion of original data of the first two rows of air dried weights to weights expressed of SI units.

2.2. Biomass waste from domestic logging

Table 2 lists historical data of domestic logging volumes and estimation of biomass waste from domestic logging in Taiwan [3]. Published domestic logging volumes were directly taken from the statistics provided from the Forestry Bureau [3]. Logging slash is the deduction of logging volume from...
Table 2
Historical domestic logging volumes and estimation of biomass waste from domestic logging in Taiwan [3].

| Year | Domestic logging volume (m³) | Above ground biomass volume (m³) | Slash volume (m³) | Slash mass (tons) | Waste volume (m³) | Waste mass (tons) |
|------|-----------------------------|---------------------------------|------------------|------------------|------------------|------------------|
| 1990 | 203,313                     | 221,232                         | 17,920           | 8960             | 19,286           | 9643             |
| 1991 | 126,059                     | 137,170                         | 11,111           | 5535             | 11,958           | 5979             |
| 1992 | 118,323                     | 128,752                         | 10,429           | 5214             | 11,224           | 5612             |
| 1993 | 71,735                      | 78,057                          | 6323             | 3161             | 6805             | 3402             |
| 1994 | 56,128                      | 61,075                          | 4947             | 2474             | 5324             | 2662             |
| 1995 | 63,177                      | 68,745                          | 5568             | 2784             | 5993             | 2996             |
| 1996 | 56,362                      | 61,329                          | 4968             | 2484             | 5346             | 2673             |
| 1997 | 52,173                      | 56,772                          | 4598             | 2299             | 4949             | 2475             |
| 1998 | 49,529                      | 53,894                          | 4365             | 2183             | 4698             | 2349             |
| 1999 | 42,945                      | 46,730                          | 3785             | 1893             | 4074             | 2037             |
| 2000 | 35,179                      | 38,280                          | 3101             | 1550             | 3337             | 1669             |
| 2001 | 47,859                      | 52,077                          | 4218             | 2109             | 4540             | 2270             |
| 2002 | 61,060                      | 66,441                          | 5382             | 2691             | 5792             | 2896             |
| 2003 | 85,542                      | 93,082                          | 7540             | 3770             | 8115             | 4057             |
| 2004 | 70,801                      | 77,042                          | 6240             | 3120             | 6716             | 3358             |
| 2005 | 60,058                      | 65,352                          | 5293             | 2647             | 5697             | 2849             |
| 2006 | 63,596                      | 69,201                          | 5605             | 2803             | 6033             | 3016             |
| 2007 | 67,219                      | 73,143                          | 5925             | 2962             | 6376             | 3188             |
| 2008 | 51,108                      | 55,612                          | 4505             | 2252             | 4848             | 2424             |
| 2009 | 44,281                      | 48,184                          | 3903             | 1951             | 4200             | 2100             |
| 2010 | 32,799                      | 35,690                          | 2891             | 1445             | 3111             | 1556             |
| 2011 | 36,913                      | 40,167                          | 3253             | 1627             | 3502             | 1751             |
| 2012 | 46,230                      | 50,305                          | 4075             | 2037             | 4385             | 2193             |
| 2013 | 42,219                      | 45,940                          | 3721             | 1861             | 4005             | 2002             |
| 2014 | 62,271                      | 67,760                          | 5488             | 2744             | 5907             | 2954             |
| 2015 | 51,608                      | 56,157                          | 4549             | 2274             | 4896             | 2448             |

Table 3
HWP tax codes for regarding items from the Customs Administration [6].

| Categories  | Item tax codes | Description                                                                 |
|-------------|----------------|------------------------------------------------------------------------------|
| Sawn wood   | 4403           | Rough wood; whether stripped of bark or sapwood, or roughly squared          |
|             | 4407           | Wood sawn, chipped lengthwise, sliced or peeled; whether planed, sanded or   |
|             |                | end-jointed, of a thickness exceeding 6 mm                                   |
| Wood panel  | 4408           | Sheets for veneering (including those obtained by slicing laminated wood),  |
|             |                | for plywood or for similar laminated wood and other wood, sawn lengthwise,  |
|             |                | sliced or peeled; whether planed, sanded, spliced or end-jointed, of a       |
|             |                | thickness not exceeding 6 mm                                                |
|             | 4410           | Particle board, oriented strand board (OSB) or similar boards (for example, |
|             |                | waferboard) of wood or other ligneous materials; whether agglomerated with  |
|             |                | resins or other organic binding substances                                    |
|             | 4411           | Fiberboard of wood or other ligneous materials; whether bonded with resins or|
|             |                | other organic substances                                                     |
|             | 4412           | Plywood, veneered panels and similar laminated wood                          |
| Paper       | 48             | Paper and paperboard; articles of paper pulp, paper or paperboard            |
|             | 47             | Wood pulp or pulp of other fibrous cellulosic material; (waste and scrap)    |
|             |                | paper or paperboard                                                          |
Table 4
Statistics on domestically produced HWP from 1990 to 2016 [3,5].

| Year | Sawn wood | Lumber | Plain plywood ($10^3$ m$^2$) | Fancy plywood ($10^3$ m$^2$) | Paper | Fine paper (tons) | Package paper (tons) | Chinese art paper (tons) | Paper board (tons) | Family and Hygiene paper (tons) |
|------|-----------|--------|-------------------------------|-------------------------------|-------|-------------------|----------------------|------------------------|-------------------|-------------------------------|
|      | Saw timber (m$^3$) | Lumber (m$^3$) | 126065 | 114901 | 583528 | 86135 | 9779 | 2,508,788 | 140741 |
| 1990 | 203313 | 697373 | | | | | | | |
| 1991 | 126059 | 757833 | | | | | | | |
| 1992 | 118323 | 564999 | 158181 | 96765 | 679043 | 93427 | 7440 | 2,950,366 | 177826 |
| 1993 | 71735 | 398796 | 113249 | 86064 | 695147 | 92845 | 7558 | 2,836,623 | 154392 |
| 1994 | 56128 | 378108 | 83278 | 77338 | 771551 | 94967 | 8535 | 3,045,500 | 156261 |
| 1995 | 63177 | 328537 | 64960 | 78026 | 792263 | 95332 | 8038 | 3,030,337 | 161045 |
| 1996 | 56362 | 366836 | 48870 | 68763 | 694944 | 86891 | 7728 | 3,213,194 | 176377 |
| 1997 | 52173 | 278747 | 46991 | 73463 | 805098 | 92776 | 8719 | 3,253,776 | 187861 |
| 1998 | 49529 | 270344 | 41811 | 64585 | 812263 | 89077 | 9212 | 2,975,404 | 186123 |
| 1999 | 42945 | 271862 | 39457 | 56701 | 821459 | 83415 | 8943 | 3,073,545 | 188229 |
| 2000 | 35179 | 232880 | 29488 | 51168 | 796916 | 82395 | 9396 | 3,233,864 | 217713 |
| 2001 | 47859 | 214399 | 29285 | 40672 | 722100 | 73930 | 7526 | 2,590,530 | 191281 |
| 2002 | 61060 | 204224 | 27366 | 36330 | 757692 | 80553 | 7349 | 3,235,255 | 191159 |
| 2003 | 85542 | 199547 | 20687 | 35030 | 740323 | 86959 | 7736 | 3,403,838 | 199696 |
| 2004 | 70801 | 239048 | 19748 | 44089 | 737370 | 91799 | 8010 | 3,554,986 | 217862 |
| 2005 | 60058 | 180992 | 14435 | 45651 | 748966 | 91111 | 6868 | 3,377,999 | 216637 |
| 2006 | 63596 | 191160 | 13105 | 46928 | 761108 | 94914 | 6941 | 3,350,646 | 206973 |
| 2007 | 67219 | 135334 | 14477 | 45869 | 777396 | 94589 | 6188 | 3,406,476 | 198974 |
| 2008 | 51108 | 135731 | 12978 | 42736 | 704294 | 84351 | 6397 | 2,909,620 | 206163 |
| 2009 | 44281 | 73641 | 10175 | 36258 | 692055 | 63700 | 5178 | 2,775,312 | 189711 |
| 2010 | 32799 | 78599 | 9344 | 40280 | 699910 | 63726 | 6553 | 2,850,379 | 197901 |
| 2011 | 36913 | 81017 | 12582 | 41029 | 690832 | 50992 | 6143 | 2,931,064 | 205255 |
| 2012 | 46230 | 88179 | 12169 | 40306 | 671309 | 46556 | 6207 | 3,073,574 | 204240 |
| 2013 | 42219 | 87224 | 12799 | 42365 | 619554 | 47223 | 6265 | 3,054,693 | 205710 |
| 2014 | 62271 | 96408 | 10053 | 41916 | 620916 | 44326 | 6915 | 3,083,250 | 206327 |
| 2015 | 51608 | 73039 | 8667 | 40383 | 531247 | 43606 | 6750 | 2,858,981 | 209909 |
| 2016 | 51608 | 72274 | 8834 | 40159 | 460924 | 39022 | 6425 | 3,009,632 | 218246 |
| Year | Sawn wood | Wood panels | Paper |
|------|------------|-------------|-------|
|      | 4403 (tons) | 4407 (tons) | 48 (tons) | 47 (tons) |
| 1990 | 3,556,219  | 481,151     | 63,968   | 79,631    |
| 1991 | 3,771,429  | 652,576     | 104,532  | 102,245   |
| 1992 | 3,620,151  | 969,972     | 175,656  | 131,602   |
| 1993 | 1,814,673  | 1,245,246   | 170,848  | 158,276   |
| 1994 | 1,830,331  | 1,009,816   | 174,453  | 123,010   |
| 1995 | 1,542,206  | 985,975     | 121,578  | 138,794   |
| 1996 | 1,559,635  | 792,797     | 119,183  | 144,000   |
| 1997 | 1,605,037  | 880,320     | 159,368  | 188,489   |
| 1998 | 1,063,796  | 732,324     | 139,187  | 178,519   |
| 1999 | 1,118,739  | 742,837     | 133,834  | 199,694   |
| 2000 | 1,020,521  | 757,472     | 119,910  | 216,411   |
| 2001 | 826,384    | 571,247     | 107,712  | 170,919   |
| 2002 | 774,477    | 666,977     | 107,798  | 197,229   |
| 2003 | 835,587    | 686,490     | 105,102  | 182,013   |
| 2004 | 912,427    | 818,671     | 114,455  | 195,389   |
| 2005 | 870,884    | 785,159     | 98,764   | 177,950   |
| 2006 | 721,641    | 757,401     | 101,327  | 187,580   |
| 2007 | 756,713    | 723,355     | 99,242   | 189,787   |
| 2008 | 631,877    | 676,545     | 110,608  | 168,690   |
| 2009 | 523,491    | 494,701     | 89,454   | 162,432   |
| 2010 | 667,745    | 716,283     | 130,130  | 201,281   |
| 2011 | 584,231    | 769,962     | 133,065  | 208,171   |
| 2012 | 619,817    | 691,683     | 135,395  | 112,029   |
| 2013 | 580,098    | 732,897     | 150,192  | 189,670   |
| 2014 | 632,834    | 808,224     | 136,914  | 277,738   |
| 2015 | 479,955    | 763,998     | 149,165  | 237,286   |
| 2016 | 458,523    | 677,629     | 128,663  | 253,437   |

| Year | Sawn wood | Wood panels | Paper |
|------|------------|-------------|-------|
|      | 4403 (tons) | 4407 (tons) | 48 (tons) | 47 (tons) |
| 1990 | 22,641     | 13,340      | 2130    | 2534      |
| 1991 | 23,587     | 13,806      | 2427    | 2624      |
| 1992 | 40,516     | 18,421      | 3212    | 3539      |
| 1993 | 44,009     | 22,586      | 4109    | 4710      |
| 1994 | 16,013     | 22,110      | 3096    | 3285      |
| 1995 | 27,427     | 25,908      | 5908    | 5908      |
| 1996 | 35,717     | 30,074      | 6433    | 6433      |
| 1997 | 25,908     | 25,908      | 6433    | 6433      |
| 1998 | 22,365     | 23,365      | 3285    | 3285      |
| 1999 | 14,840     | 22,586      | 3285    | 3285      |
| 2000 | 18,421     | 18,421      | 3285    | 3285      |
| 2001 | 22,110     | 22,110      | 3285    | 3285      |
| 2002 | 27,427     | 27,427      | 3285    | 3285      |
| 2003 | 35,717     | 35,717      | 3285    | 3285      |
| 2004 | 25,908     | 25,908      | 3285    | 3285      |
| 2005 | 22,365     | 22,365      | 3285    | 3285      |
| 2006 | 14,840     | 14,840      | 3285    | 3285      |
| 2007 | 18,421     | 18,421      | 3285    | 3285      |
| 2008 | 22,110     | 22,110      | 3285    | 3285      |
| 2009 | 27,427     | 27,427      | 3285    | 3285      |
| 2010 | 35,717     | 35,717      | 3285    | 3285      |
| 2011 | 25,908     | 25,908      | 3285    | 3285      |
| 2012 | 22,365     | 22,365      | 3285    | 3285      |
| 2013 | 14,840     | 14,840      | 3285    | 3285      |
| 2014 | 18,421     | 18,421      | 3285    | 3285      |
| 2015 | 22,110     | 22,110      | 3285    | 3285      |
| 2016 | 27,427     | 27,427      | 3285    | 3285      |
the above ground biomass volume estimated by the IPCC method [6]. Of Taiwan plantation forests distribution, there are 37% softwood plantation forests, 42% of hardwood plantation forests and 21% mixed softwood and hardwood plantation forests [3]. Biological expansion factors (BEF) of softwood, hardwood and 21% mixed softwood and hardwood plantation are 1.27, 1.40 and 1.34, respectively [7].

\[
\text{Above ground biomass volume} = \left( \text{Domestic logging volume} \times 1.27 \right) \div \left( 1 + 0.22 \right) \times 0.37 + \left( \text{Domestic logging volume} \times 1.40 \right) \div \left( 1 + 0.24 \right) \times 0.42 + \left( \text{Domestic logging volume} \times 1.34 \right) \div \left( 1 + 0.23 \right) \times 0.21.
\]

Wood density is 0.5 ton/m³ to convert slash volume to slash mass. Domestic survey conducted by Chen et al. [8] indicates that ratios for log-processing waste for sawn wood and wood panel are 36.3 and 28.5%.

2.3. Biomass and carbon inflow from HWP

Based on the IPCC definition [4], there are three categories of HWP: sawn wood, wood panel and paper products. Each category of HWP contains a variety of respective products, listed as item, on the current tax code system of the Customs Administration [4]. Table 3 lists the tax codes of each respective item of HWP Customs Administration [4] for further calculation and prediction of HWP contribution of biomass waste in 2017–2065 [1]. Governmental statistics of each item of HWP from customs administration is employed to further calculate and predict biomass wastes derived from imported and exported HWP.

Biomass waste from forest sectors consisted of waste from domestically harvested wood product (HWP), from available processing waste from domestic harvest and the production of HWP, as well as from domestically produced and imported HWP. Table 4 lists statistics on domestically produced and imported HWP from 1990 to 2016. The data first column of Table 4, sawn timber production, is from Forestry Bureau [3]. Data from other columns for statistics for domestically produced HWP are data of other items published from the Ministry of Economic Affairs [7]. According to the last 10-year average from survey

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**Table 7**

Biomass tonnage of imported and exported HWP.

| Year | Import |  |  | Export |  |  |
|------|--------|---|---|--------|---|---|
|      | Sawn wood (tons) | Wood panels (tons) | Paper (tons) | Sawn wood (tons) | Wood panels (tons) | Paper (tons) |
| 1990 | 3,633,633 | 498,205 | 2,170,429 | 25,220 | 131,107 | 651,632 |
| 1991 | 3,981,605 | 662,856 | 2,886,718 | 20,702 | 102,215 | 840,030 |
| 1992 | 4,131,111 | 903,454 | 2,875,447 | 32,573 | 87,988 | 792,838 |
| 1993 | 2,753,928 | 936,196 | 3,001,202 | 28,400 | 70,042 | 745,396 |
| 1994 | 2,536,133 | 1,136,422 | 3,543,125 | 26,312 | 82,383 | 813,425 |
| 1995 | 2,275,363 | 963,101 | 3,022,894 | 27,888 | 93,138 | 877,538 |
| 1996 | 2,117,189 | 843,333 | 3,261,819 | 32,470 | 91,763 | 1,071,352 |
| 1997 | 2,236,822 | 1,025,411 | 3,097,734 | 36,162 | 84,659 | 983,923 |
| 1998 | 1,616,508 | 960,432 | 2,897,746 | 31,239 | 52,819 | 891,588 |
| 1999 | 1,675,418 | 871,638 | 3,157,577 | 35,464 | 47,339 | 936,815 |
| 2000 | 1,600,193 | 899,419 | 3,019,580 | 40,930 | 45,688 | 1,002,500 |
| 2001 | 1,257,868 | 691,672 | 2,827,712 | 45,398 | 40,831 | 1,093,621 |
| 2002 | 1,297,309 | 793,728 | 2,879,391 | 42,594 | 41,457 | 1,232,746 |
| 2003 | 1,369,869 | 809,648 | 3,157,829 | 42,966 | 36,829 | 1,246,677 |
| 2004 | 1,557,988 | 935,996 | 3,175,784 | 56,279 | 39,627 | 1,388,186 |
| 2005 | 1,490,439 | 899,112 | 2,918,125 | 57,845 | 35,107 | 1,399,768 |
| 2006 | 1,331,138 | 902,710 | 2,973,025 | 52,030 | 36,076 | 1,489,314 |
| 2007 | 1,332,061 | 839,199 | 3,052,928 | 59,212 | 31,683 | 1,605,351 |
| 2008 | 1,177,580 | 735,803 | 2,857,668 | 48,002 | 34,010 | 1,255,785 |
| 2009 | 916,372 | 605,412 | 2,406,053 | 43,226 | 28,774 | 1,366,082 |
| 2010 | 1,245,625 | 817,261 | 2,612,766 | 34,311 | 29,186 | 1,288,622 |
| 2011 | 1,218,774 | 775,152 | 2,694,356 | 37,315 | 26,924 | 1,333,164 |
| 2012 | 1,180,350 | 667,832 | 2,913,769 | 46,840 | 28,696 | 1,481,780 |
| 2013 | 1,181,696 | 769,185 | 2,821,061 | 59,935 | 29,931 | 1,466,464 |
| 2014 | 1,296,952 | 807,938 | 2,750,810 | 53,044 | 25,656 | 1,438,875 |
| 2015 | 1,119,557 | 777,004 | 2,521,515 | 33,653 | 20,041 | 1,231,456 |
| 2016 | 1,022,537 | 716,496 | 2,726,115 | 32,383 | 17,209 | 1,467,341 |
by the Ministry of Economy [5], the volumetric ratios of wood panels, sawn wood, and paper consumed
in Taiwan were 12, 18, and 70%, respectively.

Table 5 lists imported HWP data from the Customs Administration [6]; tonnage data of subcategory
items of wood panels were converted from square meters and thickness of plywood. The thickness of
both plain and fancy plywood, 3.175 mm, is from a domestic survey [8].

Table 6 lists exported HWP data from all respective items listed and published by Customs
Administration [6].

Table 7 lists overall biomass tonnage of imported and exported HWP data, derived from summation
of data from Tables 5 and 6. Statistics on sawn wood are obtained by adding items 4403 and 4407. The
ratio of oven to air dried masses of sawn wood is 0.9. Statistics on wood panels are obtained by adding
items 4408, 4410, 4411 and 4412. Statistics on paper are obtained by adding items 47 and 48. The ratio
of oven to air dried masses of paper is 0.9 [6].

Table 8 lists carbon mass overall biomass tonnage of imported and exported HWP data, using IPCC
methodology [6] and derived from summation of data from Tables 5 and 6. Carbon ratio to overall dried
mass for sawn wood, wood panels and paper are 0.225, 0.294 and 0.45 C ton/m3, respectively [6].

Table 9 lists carbon inflow statistics on HWP from 2007 to 2016, summarizing data from Tables 7
and 8. This study assumes that ratios of the post-consumer HWP in the study period of [1] remain
constant. The results of this study facilitate the evaluation of the potential for bioenergy generation in
Taiwan from available biomass waste from the two most prevailing sources, rice paddies and forest
sectors. Carbon inflow values of each category of forest sector include the import plus domestic pro-
duction deduced by export values.
Table 9
Carbon inflow statistics on HWP from 2007 to 2016.

| Year | Sawn wood (metric tons C) | Wood panel (metric tons C) | Paper (metric tons C) |
|------|---------------------------|---------------------------|----------------------|
|      | Import | Export | Domestic production | Inflow | Import | Export | Domestic production | Inflow | Import | Export | Domestic production | Inflow |
| 2007 | 666,031 | 29,606 | 45,574 | 681,999 | 392,745 | 14,828 | 56,330 | 434,248 | 1,526,464 | 802,676 | 2,017,630 | 2,741,418 |
| 2008 | 588,790 | 24,001 | 42,039 | 606,828 | 344,356 | 15,917 | 52,006 | 380,445 | 1,428,834 | 627,892 | 1,759,871 | 2,560,813 |
| 2009 | 458,186 | 21,613 | 26,532 | 463,106 | 283,333 | 13,466 | 43,343 | 313,209 | 1,203,026 | 683,041 | 1,676,698 | 2,196,683 |
| 2010 | 622,812 | 17,155 | 25,065 | 630,721 | 382,478 | 13,659 | 46,322 | 415,141 | 1,306,383 | 644,311 | 1,718,311 | 2,380,383 |
| 2011 | 609,387 | 18,658 | 26,534 | 617,263 | 362,771 | 12,600 | 50,043 | 400,214 | 1,347,178 | 666,582 | 1,747,929 | 2,428,525 |
| 2012 | 590,175 | 23,420 | 30,242 | 596,997 | 312,545 | 13,430 | 48,983 | 348,098 | 1,456,885 | 740,890 | 1,799,580 | 2,515,575 |
| 2013 | 590,848 | 29,968 | 29,125 | 590,005 | 359,979 | 14,008 | 51,493 | 397,464 | 1,410,530 | 733,232 | 1,770,050 | 2,447,348 |
| 2014 | 648,476 | 26,522 | 35,703 | 657,657 | 378,115 | 12,007 | 48,510 | 414,618 | 1,375,405 | 719,438 | 1,782,780 | 2,438,748 |
| 2015 | 559,779 | 16,827 | 28,046 | 570,998 | 363,638 | 9379 | 45,786 | 400,044 | 1,260,757 | 615,728 | 1,642,357 | 2,287,387 |
| 2016 | 511,269 | 16,192 | 27,873 | 522,951 | 335,320 | 8054 | 45,733 | 372,999 | 1,363,058 | 733,670 | 1,680,412 | 2,309,799 |
| Avg. | 22,396 | 593,853 | 12,735 | 387,648 | 696,746 | | 2,430,668 | |
Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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