

KORESPONDENSI ARTIKEL

Problem analysis and development strategy of shrimp culture in Tanah Laut Regency, South Kalimantan Province, Indonesia.

Proses penerbitan artikel ini, penulis minta bantuan kawan yakni ibu Firly dari UPR dan Bpk. Benny UNSRAT. Namun penyusunan/penulisan artikel semuanya atas karya dan hasil pemikiran penulis sendiri. Perbaikan pada artikel ini juga penulis sendiri yang melakukan sepenuhnya berdasar dari permintaan reviewer jurnal yang disampaikan melalui Ibu Firly dan Bpk. Benny.

Pembuktian bahwa penulisan awal dan proses perbaikan dilakukan sendiri oleh penulis bisa kami sampaikan berdasarkan kumpulan file2 MS. Word pada laptop penulis berdasarkan nama file dan tanggal terakhir file tersebut terakhir disimpan/diedit.

Berikut ini adalah beberapa file konsep hingga file akhir (**Journal Achmad Syamsu Hidayat 2017 Tambak, 25/04/2017/19.01**) yang penulis kirim melalui Bu Firly untuk minta tranlate ke Bahasa Inggris oleh Bpk. Benny. Pada saat itu email yang digunakan masih menggunakan syamsu@unlam.ac.id sebelum ULM menggantinya menjadi xxxxxx@ulm.ac.id.

The screenshot shows a Windows File Explorer window with the following details:

- Folder Path:** This PC > Windows (C:) > KERIA > DOSEN > OBAHAN-KULIAH > JURNAL KU BARU
- File List:**

Name	Date modified	Type	Size
artikkelimiahjurnal	12/01/2017 10:48	WinRAR ZL...	82 KB
BAB 5 pembahasan HANAFI	01/09/2019 15:12	Microsoft ...	234 KB
BAB 7 Rencana Isi Jurnal 2 Nelayan aja	21/09/2016 6:40	Microsoft ...	96 KB
BAB 7 Rencana Isi Jurnal 2	11/09/2016 3:35	Microsoft ...	158 KB
C071211218 Fishermen and Fish Farmer IOSR	01/04/2018 12:27	Microsoft ...	110 KB
C071211218	29/08/2017 13:32	Chrome HT...	353 KB
Certificate	14/08/2018 22:47	Chrome HT...	957 KB
IBDR	08/01/2017 13:27	Chrome HT...	1,073 KB
JBES-Vol9No6-p84-96 welfare	01/04/2018 12:22	Microsoft ...	274 KB
JBES-Vol9No6-p84-96	03/01/2017 1:40	Chrome HT...	641 KB
Journal Achmad Syamsu Hidayat 16 grafik inggris	29/09/2016 5:20	Microsoft ...	94 KB
Journal Achmad Syamsu Hidayat 16	25/09/2016 13:02	Microsoft ...	93 KB
Journal Achmad Syamsu Hidayat 2016-2 inggris with picture	30/09/2016 11:05	Microsoft ...	102 KB
Journal Achmad Syamsu Hidayat 2016-2 inggris	30/09/2016 11:02	Microsoft ...	102 KB
Journal Achmad Syamsu Hidayat 2017 Tambak Inggris	02/05/2017 9:21	Microsoft ...	71 KB
Journal Achmad Syamsu Hidayat 2017 Tambak	25/04/2017 19:01	Microsoft ...	68 KB
Journal Aku Pengembangan Tambak edit 1	21/04/2017 15:30	Microsoft ...	71 KB
Journal Aku Pengembangan Tambak edit 2	22/04/2017 1:40	Microsoft ...	73 KB
Journal Aku Pengembangan Tambak edit 3	25/04/2017 19:00	Microsoft ...	68 KB
Journal Aku Pengembangan Tambak	19/04/2017 2:23	Microsoft ...	70 KB
Journal Kedua Edit	24/09/2016 11:00	Microsoft ...	97 KB
Journal Kedua Edit1	25/09/2016 8:22	Microsoft ...	111 KB
Journal Kedua	22/09/2016 10:16	Microsoft ...	94 KB
JURNAL 3 STRATEGI kesejahteraan	13/09/2016 3:43	Microsoft ...	896 KB
kuisioner Muara Asam2	08/11/2017 23:55	Microsoft ...	52 KB
link.jurnal agustus 2017	10/08/2017 18:13	Microsoft ...	1,466 KB
Payment JBES 2016	04/01/2017 7:15	Chrome HT...	122 KB
Sreen shot Jurnalku Ke Dua	05/01/2017 22:03	Microsoft ...	1,801 KB
SURAT PERNYATAAN	30/08/2017 14:11	Microsoft ...	14 KB

The right pane displays the content of the selected file:

ANALISIS PERMASALAHAN DAN STRATEGI PENGEMBANGAN USAHA TAMBAK UDANG DI KABUPATEN TANAH LAUT PROVINSI KALIMANTAN SELATAN

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ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi kondisi usaha budidaya tambak dan menganalisis permasalahan-permasalahan yang dihadapi oleh pembudidaya serta untuk menyusun konsep strategi pengembangannya. Penelitian dilakukan pada Desa Muara Kintap Kabupaten Tanah Laut dengan pertimbangan bahwa wilayah tersebut sangat mewakili masalah yang diteliti.

Hasil penelitian menunjukkan bahwa kondisi usaha budidaya tambak udang pada wilayah studi mengalami tekanan lingkungan yang sangat kuat dari berbagai aktivitas perlabangan dan perkebunan disekitarnya sehingga tidak dapat beroperasi lagi secara produktif. Analisis SWOT menunjukan bahwa usaha budidaya tambak berada pada kuadran IV (FSI -0,21 dan FSE -0,71) yakni pada posisi yang lemah dengan ancaman lingkungan eksternal yang sangat kuat dimana kekuatan internal tidak cukup mampu menghadapinya atau pada strategi defensif.

Pengembangan usaha tambak pada wilayah studi dapat dilakukan dengan melakukan revitalisasi dan konservasi kawasan lindung dan mangrove serta pembatasan pembukaan ruang kawasan pesisir, peningkatan peran dan kepedulian semua pihak (*stake holder*) untuk pelestarian lingkungan pesisir dan laut, mengembangkan usaha ekonomi produktif masyarakat sekitar khususnya bidang perikanan, dan meningkatkan partisipasi masyarakat dalam pengelolaan lingkungan perairan dan mangrove.

Kata kunci : Tambak Udang, Permasalahan, Strategi Pengembangan

PENDAHULUAN

Pesisir Kabupaten Tanah Laut memiliki luas wilayah pesisir mencapai 2.430,16 km²

Isi dari file (**Journal Achmad Syamsu Hidayat 2017 Tambak, 25/04/2017/19.01**) sebagai berikut:

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PENDAHULUAN

Pesisir Kabupaten Tanah Laut memiliki luas wilayah pesisir mencapai 2.430,16 km² atau sekitar 63,15% dari total luas kabupaten. Kabupaten ini selain memiliki potensi sumberdaya perikanan yang besar juga kaya akan sumberdaya tambang dan mineral (batubara tersebar di areal seluas 314,4 juta m²). Sumberdaya perikanan sejak lama telah dimanfaatkan oleh masyarakat untuk berbagai usaha produktif seperti budidaya tambak serta usaha penangkapan ikan sebagai sumber utama pencaharian mereka.

Pemanfaatan sumberdaya tambang dan mineral juga berlangsung pesat sejak awal tahun 90an terlebih lagi setelah berlakunya undang undang Otonomi Daerah tahun 2004. Berdasarkan data Bappeda Provinsi Kalimantan Selatan tahun 2012, di wilayah pesisir Kabupaten Tanah Laut terdapat 53 perusahaan pertambangan pemegang izin usaha pertambangan (IUP/IUPK) dan Perjanjian Karya Pengusahaan Pertambangan Batubara (PKP2B) dengan luas areal sekitar 58.960 ha (Regional Development Planning Board of Tanah Laut Regency, 2014).

Desa Muara Kintap Kecamatan Kintap merupakan salah satu desa pesisir di Kabupaten Tanah Laut yang mayoritas penduduknya adalah nelayan dan pembudidaya ikan (tambak). Namun pada desa ini juga beroperasi fasilitas bongkar muat dan pengapalan dari beberapa perusahaan pertambangan batubara. Operasional pelabuhan khusus dan *stockpile* beberapa perusahaan batubara di Sungai Kintap yang setiap hari melewati Pangkalan Pendaratan Ikan (PPI) Muara Kintap yang disekitarnya juga merupakan tempat bersandarnya kapal-kapal nelayan. Aktivitas ini tentu memberikan dampak fisik terutama kepadatan alur pelayaran pada daerah muara Sungai Kintap. Selain itu beroperasinya beberapa pelabuhan khusus di sepanjang pesisir pantai wilayah ini menyebabkan banyaknya jumlah kapal tongkang pengangkut batubara yang labuh jangkar untuk menunggu antrian muat batubara.

Aktivitas sektor pertambangan secara nyata telah memberikan manfaat positif terhadap peningkatan ekonomi regional Kabupaten Tanah Laut khususnya pada pendapatan daerah (PDRB sektor pertambangan 4,4 % tahun 1999 menjadi 9,52% tahun 2006, 10,90% tahun 2012 dan 25,62% pada tahun 2015), namun kegiatan ini juga diduga memberikan dampak negatif yang potensial pada penurunan kualitas lingkungan pesisir (BPS Kab. Tanah Laut, 1999, 2006, 2012 dan 2016).

Berdasar hasil studi terdahulu bahwa nelayan kecil Desa Muara Kintap khususnya nelayan lampara dasar (ikan dan udang) tidak terpengaruh oleh aktivitas transportasi tambang batubara di wilayah studi karena areal penangkapan mereka yang berada pada jalur 3-6 mil dan menggunakan alat tangkap lebih dari satu sehingga dapat melakukan penangkapan hampir sepanjang tahun. Pendapatan rata-rata perbulan mereka lebih tinggi dari UMP Kalimantan Selatan dan juga lebih tinggi dibanding nelayan Desa Bawah Layung Kecamatan Kurau, kecuali nelayan kecil tradisional Muara Kintap yang pendapatannya masih rendah karena keterbatasan akses terhadap sumberdaya perikanan, (Hidayat, A.S., 2014).

Hidayat, A.S. (2016) juga menyatakan bahwa keberadaan perusahaan tambang batubara di wilayah ini tidak secara nyata meningkatkan kesejahteraan masyarakat Muara Kintap. Kondisi kesejahteraan nelayan di Desa Muara Kintap lebih buruk daripada kesejahteraan masyarakat Kabupaten Tanah Laut pada umumnya berdasarkan indikator pendidikan dan perumahan. Namun dari pemanfaatan tenaga kesehatan dalam penanganan kelahiran dan menyusui bayi masih lebih baik daripada masyarakat Kabupaten Tanah Laut secara umum.

Berdasar kondisi di atas, dirumuskan masalah dalam penelitian ini yakni bagaimanakah kondisi dan permasalahan pada usaha budidaya tambak udang di wilayah ini serta strategi pengembangannya. Tujuan dari penelitian ini adalah untuk mengidentifikasi kondisi usaha budidaya tambak dan menganalisis permasalahan-permasalahan yang dihadapi oleh pembudidaya serta untuk menyusun konsep strategi pengembangan usaha budidaya tambak yang dilakukan oleh pembudidaya di wilayah studi.

METODE PENELITIAN

Penelitian dilakukan dengan metode survey yang penjabaran hasilnya menggunakan metode deskriptif. Lokasi penelitian ditetapkan secara sengaja (*purposive*) pada Desa Muara Kintap Kecamatan Kintap Kabupaten Tanah Laut Provinsi Kalimantan Selatan, karena sangat mewakili terhadap permasalahan yang diteliti.

Sampel pada penelitian ini adalah Rumah Tangga Perikanan (RTP) pembudidaya tambak udang. Penetapan jumlah sampel dilakukan dengan menggunakan rumus dari **Slovin** (Sekaran, 2000). Jumlah RTP pembudidaya tambak udang Desa Muara Kintap pada bersumber dari tenaga penyuluh perikanan setempat dan unit kerja terkait, dengan mengacu pada rumus Slovin di atas dan dengan menggunakan taraf kepercayaan 90 persen (toleransi galat 10 persen), maka jumlah sampel pada penelitian ini adalah sebanyak 23 responden dari 30 RTP pembudidaya tambak udang yang ada.

Pengumpulan data secara langsung (*data primer*) dilakukan melalui wawancara dengan berpedoman pada daftar pertanyaan (*questionere*) yang telah dipersiapkan serta dengan metode wawancara secara mendalam (*in-depth interview*) pada orang yang dianggap sangat mengetahui pada informasi yang diperlukan (*key person*).

Analisis kondisi dan permasalahan usaha budidaya tambak pada wilayah studi dilakukan secara deskriptif berdasar hasil studi lapangan dengan ditunjang telaahan berbagai hasil studi terdahulu yang relevan. Penyusunan konsep strategi pengelolaan terhadap usaha budidaya tabak udang di wilayah studi digunakan metode analisis *strength* (kekuatan), *weakness* (kelemahan), *opportunity* (peluang) dan *threat* (ancaman) yang biasanya disebut analisis SWOT (Rangkuti, 2005).

HASIL PENELITIAN

1. Karakteristik Responden

Usia responden pembudidaya tambak berkisar antara 25-65 tahun, sebanyak 57% berada pada usia yang sangat produktif 26 hingga 45 tahun. Pendidikan formal responden pembudidaya udang umumnya (79%) hanya menamatkan pendidikan Sekolah Dasar. Semua responden merupakan pendatang dari daerah Maros Sulawesi Selatan walaupun kedatangan mereka pada wilayah ini tidak serentanyang tergambar dari variasi lamanya mereka sudah menetap pada wilayah ini. Sebesar 65% mereka sudah tinggal di wilayah studi berkisar antara 16-25 tahun.

Pembudidaya ikan responden pada penelitian ini memiliki tanggungan yang relatif besar, hal ini terlihat dari jumlah anggota keluarga dalam satu rumah tangga. Sebagian besar (74%) responden memiliki anggota lebih dari 4 (empat) orang dan hanya 26% yang jumlahnya hingga 4 (empat) orang.

2. Kondisi Usaha dan Permasalahan Budidaya Tambak

Fasilitas utama yang untuk mendukung budidaya tambak pada wilayah ini adalah irigasi yang berfungsi sebagai *inlet* dan *outlet* air tambak. Irigasi ini dibangun sekitar awal tahun 1999-2000 atas program bantuan Pemerintah Jepang yakni Sector Program Loan (SPL)-OECD yang pada wilayah ini digunakan untuk Proyek Pengembangan Tambak dan *Hatchery*. Kondisi fasilitas pengairan ini sekarang sudah tidak terawat lagi, khususnya pada bagian *outlet* yang bermuara mengarah ke Sungai Kintap telah terjadi pendangkalan sehingga keluar masuknya air sudah tidak berjalan dengan baik begitu pula dengan bagian muara irigasi (*inlet*) yang menghadap ke laut dan menuju kedalam saluran irigasi utamanya.

Usaha budidaya tambak di Desa Muara Kintap Kabupaten Tanah Laut kini sudah tidak dijalankan lagi secara intensif oleh pemiliknya. Hal ini terlibat pada kenyataannya bahwa pembudidaya sudah tidak berani lagi menebarkan benih udang (benur) pada petakan tambak mereka karena selalu mengalami kematian total setelah beberapa minggu di tebar. Kegagalan ini sudah terjadi beberapa tahun terakhir sehingga mereka sudah hampir tidak punya kekuatan modal lagi untuk mencoba mengusahakan tambak mereka.

Mangkraknya usaha budidaya tambak udang ini juga terjadi pada lokasi tambak lainnya pada wilayah pesisir Kabupaten Tanah Laut. Indikasi lesunya usaha budidaya ini terlihat dari tidak beroperasinya perusahaan-perusahaan perikanan yang melakukan usaha budidaya dan perdagangan (*cold storage*) baik antar pulau maupun ekspor di kabupaten ini. Tahun 2000 terdapat 14 perusahaan perikanan yang aktif melakukan perdagangan ekspor dan antar pulau, bahkan diantaranya juga sekaligus menjalankan usaha budidaya tambak sendiri seperti PT. Suri Tani Pemuka. Namun pada tahun 2007 hanya tinggal 5 perusahaan yang masih menjalankan usahanya dengan membuat rekomendasi dari DKP Kabupaten Tanah Laut untuk memperpanjang SIUP (DKP Kabupaten Tanah Laut, 2008). Pada tahun 2010 perusahaan industri perikanan (*cold storage*) yang beroperasi di Kabupaten Tanah Laut berkurang menjadi 4 perusahaan yaitu PT. Ebi Mas Besar, PT. Borneo Surya Abadi, PT. Karimata Timur, dan PT. Bumi Menara Internusa (Regional Development Planning Board of Tanah Laut Regency, 2014).

Hasil wawancara langsung dengan beberapa tokoh masyarakat bahwa usaha budidaya tambak pada wilayah ini sejak tahun 2007 sudah mulai tidak produktif lagi disebabkan tingkat kegagalan (kematian) yang sangat tinggi

karena serangan penyakit. Hal ini sejalan dengan hasil wawancara dengan responden pembudidaya bahwa mereka dalam beberapa tahun terakhir sudah tidak berani lagi menebarkan benih udang ke tambak mereka karena selalu mengalami kegagalan.

Sejalan dengan hal di atas, berdasarkan data tahun 2007 produksi perikanan budidaya tambak Kabupaten Tanah Laut sebesar 1.661,10 ton dari areal luas tebar sebesar 1.940,30 ha dengan produktifitas 856,10 kg/ha/tahun. Kemudian pada tahun 2011, produksi tambak mengalami penurunan yang sangat tajam yaitu 199,22 ton dari luas total tambak 1.759,36 ha dengan produktifitas 113,24 kg/ha/tahun (Regional Development Planning Board of Tanah Laut Regency, 2014).

Tidak beroperasinya usaha budidaya tambak udang ini juga terlihat secara fisik dari kondisi petakan tambak yang tidak terurus, pematang dan pintu kontrol air serta rumah jaga banyak yang rusak. Akses transportasi (jalan) pada kawasan tambak juga banyak yang rusak sehingga sangat sulit untuk mencapai rumah satu dengan lainnya dalam kawasan tersebut. Kerusakan pematang sangat banyak terjadi pada areal tambak yang berada disepanjang (sebelah kiri dan kanan) Sungai Kintap dan bahkan beberapa bagian wilayah tersebut sudah menjadi tempat tambat tongkang dan *tug boat* batubara yang menunggu antrian di pelabuhan khusus batubara. Sebagian kecil petakan tambak ada yang dioperasikan oleh pembudidaya tapi hanya memanfaatkan ikan dan udang yang ikut masuk dari pengaruh pasang air yang hasilnya untuk dimakan sehari-hari.

Menurut hasil studi terdahulu tahun 2007 yang berjudul "*Studi Pasca Stock File Dan Pelabuhan Khusus Batubara di Kawasan Pesisir*" menyimpulkan bahwa degradasi kawasan pesisir Kabupaten Tanah Laut cenderung disebabkan oleh degradasi ekosistem daratan (erosi dan pencemaran) ke arah kawasan pesisir akibat kerusakan daerah tangkapan air (*catchment area*) yang mengakibatkan kerusakan massa air kearah hilir meningkat diiringi kenaikan debit air sungai yang menimbulkan pengenceran salinitas kawasan pesisir. Rusaknya habitat dan ekosistem mangrove akibat pengenceran salinitas dan konversi lahan, menyebabkan pantai kehilangan sistem perangkap sediment alamiah, yang akibatnya menurunkan atau hilangnya kapasitas pembentukan daratan kearah laut oleh proses sedimentasi (DKP Kabupaten Tanah Laut, 2008).

Hasil analisis dalam penyusunan RZWP-3-K Kabupaten Tanah Laut Tahun 2014 yang menyatakan bahwa faktor pembatas utama untuk pengembangan kawasan budidaya tambak di Kabupaten Tanah Laut adalah kadar salinitas yang cukup rendah yang disebabkan banyaknya sungai mengalir di wilayah ini, sehingga menyebabkan kadar salinitas rendah terutama pada musim hujan. Faktor lainnya adalah pengaruh pencemaran, terutama pada tambak yang berada di dekat sungai yang di atasnya merupakan kawasan perkebunan kelapa sawit, pertambangan, pelabuhan dan permukiman yang berpotensi menimbulkan adanya pencemaran. Selain itu kondisi topografi yang cukup rendah pada wilayah tambak wilayah ini, sehingga ketika terjadi curah hujan tinggi dan air pasang tinggi menyebabkan banjir atau air meluap (Regional Development Planning Board of Tanah Laut Regency, 2014).

Hasil pengujian terhadap kualitas air tahun 2012 pada empat titik sekitar wilayah Muara Kintap menunjukkan angka salinitas yang sangat rendah ($115^{\circ}15'44.919''$ E dan $3^{\circ}53'41.136''$ S = 6,0 ppm; $115^{\circ}15'26.153''$ E dan $3^{\circ}05'44.134''$ S = 10,0 ppm; $115^{\circ}15'37.394''$ E dan $3^{\circ}05'32.736''$ S = 3 ppm; $115^{\circ}14'58.641''$ E dan $3^{\circ}05'44.843''$ S = 5,0 ppm) (Regional Development Planning Board of Tanah Laut Regency, 2014). Sementara berdasarkan Al Qadri (1999) untuk pengembangan budidaya ikan (20–26 ppm cukup sesuai dan 27–32 ppm kategori sesuai) dan rumput laut (>22 ppm kategori sesuai) masih dalam kisaran normal untuk pertumbuhan ikan budidaya.

Indeks keanekaragaman fitoplankton pada perairan di pesisir Kabupaten Tanah Laut berkisar antara 0 – 2.427, dengan membandingkan nilai indeks keanekaragaman yang diperoleh dengan pendapat Magurran (1988), maka keadaan struktur komunitas fitoplankton di wilayah studi tergolong sebagai komunitas yang tidak stabil sampai lebih stabil, sedangkan kalau dibandingkan dengan pendapat Wilhm and Dorris (1968), maka seluruh perairan di wilayah studi dapat dikategorikan dalam perairan tercemar sedang karena mempunyai indeks keanekaragaman yang berkisar antara 1,0 – 3,0. Logam berat yang dianalisis adalah besi (Fe), kadmium (Cd), tembaga (Cu), timbal (Pb) dan mangan (Mn). Berdasarkan hasil analisis laboratorium bahwa di semua lokasi pengukuran yang dilakukan unsur Fe, Mn dan Cu sudah melewati ambang batas baku mutu yang ditentukan oleh Kepmen LH No. 51 Tahun 2004 (Regional Development Planning Board of Tanah Laut Regency, 2014).

Beberapa parameter kualitas air di atas mengindikasikan bahwa kegagalan usaha budidaya tambak udang yang dilakukan oleh pembudidaya karena memang kualitas lingkungan perairan disekitarnya sudah mengalami penurunan daya dukung yang berarti. Untuk mengembalikan usaha budidaya tambak udang pada wilayah ini harus dilakukan melalui perbaikan kualitas lingkungan yang menyeluruh pada wilayah sekitar dan untuk itu diperlukan usaha yang kuat dari semua pihak dan memerlukan banyak biaya besar (Regional Development Planning Board of Tanah Laut Regency, 2014).

Pendapatan Rumah Tangga Pembudidaya Tambak

Usaha budidaya tambak yang sudah tidak bisa lagi diharapkan memberikan penghasilan bagi pembudidaya Desa Muara Kintap membuat mereka harus mencari sumber penghasilan lainnya seperti mencari kepiting, membuat alat tangkap, jasa tukang, dan berdagang ikan untuk menghidupi keluarga mereka. Bahkan areal tambak pada wilayah (RT. 5 dan RT. 6) Desa Muara Kintap yang letaknya berbatasan langsung dengan areal

perkebunan kapala sawit PT. Kintap Jaya Watindo (PT. KJW) sebagian sudah ada yang dijual oleh pemiliknya dengan nilai sekitar 20 juta rupiah per hektarnya. Hal yang sama juga terjadi dengan lahan tambak yang berada disekitar pelabuhan khusus PT. SSDK.

Pembudidaya ikan yang berada berdekatan dengan areal pelabuhan khusus batubara (RT. 8 dan RP. 9) sempat bekerja sebagai pekerja manual tambang batubara. Pekerjaan ini dilakukan dengan mengumpulkan batubara ke dalam karung dimana satu karung dihargai sebesar Rp. 3.000,-. Dari pekerjaan ini mereka bisa mendapatkan penghasilan antara Rp. 150.000 hingga Rp. 300.000,- per hari kerja. Namun pekerjaan ini tidak bisa dilakukan setiap hari karena pekerjaan ini menguras tenaga yang sangat besar. Pekerjaan sebagai pekerja tambang manual ini hanya berlangsung hingga akhir tahun 2013 setelah itu mereka tidak bisa lagi melakukan pekerjaan tersebut karena kegiatan tersebut dianggap ilegal oleh pihak yang berwajib.

Pekerjaan lainnya yang dapat dimanfaatkan oleh masyarakat sekitar pada perusahaan batubara berupa tenaga keamanan, *checker* di pelabuhan dan sebagai pengikat tali tambat kapal. Dari pekerjaan ini masyarakat mendapatkan penghasilan antara Rp. 2.000.000,- hingga Rp. 3.000.000,- rupiah per bulan. Namun tidak banyak masyarakat yang terserap dari pekerjaan ini hanya sekitar 6 orang. Pekerjaan lain yang dimanfaatkan adalah sebagai pengendali atau kontrol buritan tongkang berisi batubara waktu keluar dari pelabuhan khusus menuju Muara Sungai Kintap. Pekerjaan ini dilakukan oleh nelayan yang ukuran kapalnya sekitar 7 GT dengan melibatkan 4 sampai 5 orang pekerja dengan bayaran sebesar Rp. 1.500.000,- setiap tripnya.

Sedikitnya jumlah masyarakat setempat yang bisa bekerja pada perusahaan pertambangan ini sejalan dengan hasil studi terdahulu bahwa keberadaan perusahaan pertambangan batubara tidak secara nyata berpengaruh positif terhadap terbukanya peluang kerja untuk masyarakat lokal dan juga tidak menjadikan berkembangnya struktur ekonomi di wilayah sekitar tambang (Siska, 2013). Kalaupun ada peluang kerja masyarakat setempat biasanya terkendala pendidikan dan skill (Ilmi Hidayat, 2010) dan sangat minim untuk bisa masuk pada bidang pertambangan (Harini dan Ariyanto, 2011). Rendahnya tingkat pendidikan keluarga nelayan dan pembudidaya ikan pada wilayah studi ini menggambarkan sebagaimana biasanya kondisi pendidikan masyarakat di wilayah pesisir Indonesia secara umum. Sejalan dengan hasil penelitian Muflikhati (2010) yang menyatakan bahwa tingkat kesejahteraan nelayan dipandang dari indikator pendidikan sangat rendah. Lebih tegas Prihandoko S., dkk (2012) menyatakan bahwa nelayan pada wilayah Pantai Utara di Jawa Barat rata-rata mengikuti pendidikan formal hanya sekitar 5 tahun atau setara dengan kelas 5 SD.

Bertolak belakang dengan hasil studi Kitula (2006), bahwa keberadaan perusahaan tambang (skala besar) di wilayah Kabupaten Gieta District, Tanzania memberikan manfaat bagi masyarakat disekitar tambangnya berupa peluang kerja sebesar 42% responden, sebesar 20,3% peningkatan jaringan jalan, air dan pembangunan sekolah, penyedia tanaman pangan 10,8% serta 8,1% usaha kecil. Bahkan sebesar 33,8% yang bisa bekerja pada perusahaan masuk di bidang pertambangnya.

3. Analisis SWOT Usaha Budidaya Tambak

Evaluasi Faktor Strategis Internal

Hasil analisis terhadap rumah tangga pembudidaya tambak di Desa Muara Kintap teridentifikasi beberapa faktor internal yang dinilai potensial berpengaruh langsung maupun tidak langsung terhadap usaha budidaya tambak yang mereka jadikan sebagai sumber penghidupan utama. Faktor-faktor internal yang bersifat positif akan menjadi unsur kekuatan dan faktor-faktor internal yang bersifat negatif akan menjadi unsur kelemahan seperti yang disajikan pada Tabel 1.

Tabel 1. Identifikasi Faktor Internal Rumah Tangga Pembudidaya Tambak Desa Muara Kintap Kabupaten Tanah Laut.

NO	Faktor Strategi	Indikator	S/W
Kekuatan (S)			
1	Pengalaman usaha budidaya tambak yang tinggi.	Sebesar 65% pembudidaya Desa Muara Kintap sudah 16-25 tahun menetap dan melakukan usaha budidaya tambak di wilayah ini, mereka semua berasal dari Sulawesi.	W1
2	Ketersediaan lahan tambak yang luas.	Pembudidaya Desa Muara Kintap memiliki areal tambak yang cukup luas rata-rata 2-4 ha bahkan ada yang mencapai belasan ha.	W2
3	Tersedianya prasarana tata kelola air (irigasi)	Pada kawasan tambak Muara Kintap terdapat saluran pengairan yang berfungsi untuk keluar masuknya air.	W3

NO	Faktor Strategi	Indikator	S/W
4	Keinginan dan semangat berusaha yang kuat.	Pertemuan dan wawancara dengan pembudidaya udang Muara Kintap menunjukkan keinginan kuat mereka untuk bisa menjalankan usaha seperti dulu lagi	W4
Kelemahan (W)			
1	Kemampuan modal usaha sangat rendah.	Kegagalan yang terus menerus membuat pembudidaya Muara Kintap sudah tidak mampu lagi melakukan penebaran benih udang secara intensif.	W1
2	Pendidikan dan keterampilan rendah.	Sebanyak 79% pembudidaya Muara Kintap hanya berpendidikan SD.	W2
3	Kondisi aset sarana budidaya dalam kondisi tidak terpelihara.	Sarana budidaya berupa kolam, pematang, pintu air, rumah jaga dan lainnya pada kondisi sudah tidak terpelihara lagi.	W3
4	Kurangnya kesadaran akan penting dan cukupnya luasan mangrove sebagai syarat keberhasilan budidaya.	Pembukaan lahan tambak secara bersamaan oleh pembudidaya kurang memperhatikan rasio daya dukung mangrove terhadap budidaya tambak.	W4
5	Terbiasa dengan program bantuan pemerintah.	Terbiasa dengan keberadaan program bantuan pemerintah membuat pembudidaya kurang mandiri dan kreatif .	W5

Sumber : Data primer diolah.

Evaluasi Faktor Strategis Eksternal

Faktor-faktor eksternal yang bersifat positif menjadi unsur peluang dan faktor eksternal yang bersifat negatif menjadi unsur ancaman seperti yang disajikan pada Tabel 2.

Tabel 2. Identifikasi Faktor Eksternal Rumah Tangga Pembudidaya Tambak Desa Muara Kintap Kabupaten Tanah Laut.

NO	Faktor Strategi	Indikator	O/T
Peluang (O)			
1	Permintaan pasar terhadap udang yang terus menerus	Merosotnya produksi udang budidaya secara nasional menyebabkan permintaan pasar selalu terbuka dan diperkuat dengan larangan impor oleh pemerintah	O1
2	Harga udang yang relatif stabil dan sudah cenderung membaik	Kegagalan panen di beberapa negara lain menyebabkan harga udang semakin membaik, Rp. 42.000,- (52 ekor/kg) tahun 1010 menjadi Rp. 52.00 tahun 2011 dan Rp. 86.000,- di tahun 2013. (Ketua Shrimp Club Indonesia (SCI) kawasan Timur Indonesia).	O2
3	Sarana transportasi semakin baik	Perbaikan jalan menuju ibukota semakin baik dengan kondisi beraspal hotmix.	O3
4	Adanya ketentuan perusahaan pertambangan untuk memberdayakan masyarakat lokal	Undang-Undang No 4 tahun 2009 yang mewajibkan pada pemegang IUP dan IUPK menyusun program pengembangan dan pemberdayaan masyarakat dan perusahaan belum menyentuh pada usaha tambak.	O4
Ancaman (T)			
1	Daya dukung lingkungan menurun akibat banyaknya aktivitas pertambangan disekitar	Pesatnya perkembangan aktivitas ekonomi pada wilayah ini menjadikan daerah mangrove dan tangkapan air sangat berkurang yang mengakibatkan menurunnya kualitas lingkungan perairan untuk budidaya.	T1
2	Adanya ancaman penyakit yang menyerang benih udang	Pengalaman pembudidaya Muara Kintap beberapa tahun ini, setelah ditebar beberapa minggu benih habis mati semua.	T2

NO	Faktor Strategi	Indikator	O/T
3	Program pengadaan sarana produksi budidaya dari pemerintah sangat terbatas	Alokasi program untuk usaha budidaya tambak sangat terbatas bahkan tidak ada beberapa tahun terakhir.	T3
4	Ketersediaan benih alam yang sudah susah didapatkan	Sudah 4-5 tahun ini benur dan nener sangat berkurang dan nelayan yang mencari juga sudah hampir tidak ada lagi.	T4
5	Tekanan lingkungan yang terus meningkat dengan berkembangnya aktivitas perkebunan dan aktivitas ekonomi lainnya.	Berbagai aktivitas di daratan, hulu sungai dan perairan pantai pada wilayah ini yang meninggalkan buangan potensial yang menimbulkan pencemaran.	T5

Sumber : Data primer diolah.

Penilaian Faktor Internal dan Eksternal

Untuk mengukur pengaruh faktor internal dan faktor eksternal terhadap pengelolaan usaha budidaya tambak di Desa Muara Kintap Kabupaten Tanah Laut digunakan tabel *Internal Factors Analysis Summary* (IFAS) dan tabel *External Factors Analysis Summary* (EFAS).

Berdasarkan analisis IFAS pada faktor internal rumah tangga pembudidaya tambak Desa Muara Kintap Kabupaten Tanah Laut diperoleh gambaran bahwa pada dasarnya mereka memiliki beberapa kekuatan seperti pengalaman berusaha dan lahan tambak yang luas dengan prasarana pengairan (irigasi), namun sayangnya modal dasar tersebut sudah dalam kondisi tidak terpelihara lagi, sehingga faktor kekuatan tersebut kalah dengan berbagai faktor kelemahan. Secara rinci pengukuran faktor internal (IFAS) disajikan pada Tabel 3.

Tabel 3. Analisis Faktor Internal (IFAS) Rumah Tangga Pembudidaya Tambak Desa Muara Kintap Kabupaten Tanah Laut.

No	Variabel	Bobot	Rating	Bobot x Rating
1	Strength (Kekuatan)			
	Pengalaman usaha budidaya tambak yang tinggi.	0,12	3,5	0,42
	Ketersediaan lahan tambak yang luas	0,14	2,5	0,35
	Tersedianya prasarana tata kelola air (irigasi).	0,12	2,5	0,3
	Keinginan dan semangat berusaha yang kuat.	0,1	3	0,3
	Jumlah	0,48		1,37
2	Weakness (Kelemahan)			
	Kemampuan modal usaha sangat rendah.	0,12	-3,5	-0,42
	Pendidikan dan keterampilan rendah.	0,1	-3	-0,3
	Kondisi aset sarana budidaya dalam kondisi tidak terpelihara.	0,12	-3	-0,36
	Kurangnya kesadaran akan penting dan cukupnya luasan mangrove sebagai syarat keberhasilan budidaya	0,1	-3	-0,3
	Terbiasa dengan program bantuan pemerintah.	0,08	-2,5	-0,2
	Jumlah	0,52		-1,58
	Total	1,00		-0,21

Sumber : Data primer diolah tahun 2015

Analisis EFAS pada faktor eksternal yang dinilai potensial berpengaruh terhadap usaha budidaya yang dijalankan rumah tangga pembudidaya tambak Desa Muara Kintap Kabupaten Tanah Laut menunjukkan bahwa ancaman atau faktor eksternal yang negatifnya lebih besar dibanding peluang atau faktor positifnya. Hasil analisis ini dengan mempertimbangkan kebutuhan kondisi ideal suatu wilayah untuk budidaya tambak, baik kondisi eksisting maupun mendatangnya. Secara rinci analisis EFAS usaha budidaya ini disajikan pada Tabel 4.

Tabel 4. Analisis Faktor Eksternal (EFAS) Rumah Tangga Pembudidaya Tambak Desa Muara Kintap Kabupaten Tanah Laut.

No	Variabel	Bobot	Rating	Bobot x Rating
1	Opportunity (Peluang)			
	Permintaan pasar terhadap udang yang terus menerus.	0,1	3	0,3

No	Variabel	Bobot	Rating	Bobot x Rating
	Harga udang yang relatif stabil dan sudah cenderung membaik.	0,1	3	0,3
	Prasarana dan sarana transportasi semakin baik.	0,1	3	0,3
	Adanya ketentuan perusahaan pertambangan untuk memberdayakan masyarakat lokal.	0,12	3	0,36
	Jumlah	0,42		1,26
2	Threat (Tantangan)			
1	Daya dukung lingkungan menurun akibat banyaknya aktivitas pertambangan disekitar.	0,14	-4	-0,56
2	Adanya ancaman penyakit yang menyerang benih udang	0,1	-3	-0,3
3	Program pengadaan sarana produksi budidaya dari pemerintah sangat terbatas.	0,1	-3	-0,3
4	Ketersediaan benih alam yang sangat berkurang.	0,1	-2,5	-0,25
5	Tekanan lingkungan yang terus meningkat dengan berkembangnya aktivitas perkebunan dan aktivitas ekonomi lainnya.	0,14	-4	-0,56
	Jumlah	0,58		-1,97
	Total	1,00		-0,71

Sumber : Data primer diolah.

Alternatif Strategi

Hasil analisis IFAS dan EFAS yang di atas dijadikan dasar untuk melakukan analisis SWOT dengan tujuan mengetahui pada posisi mana beradanya usaha budidaya tambak yang dilakukan oleh rumah tangga pembudidaya Desa Muara Kintap Kabupaten Tanah Laut terhadap kekuatan, kelemahan, peluang dan ancaman yang dimilikinya. Berdasar pada pendekatan tersebut, dapat disusun berbagai alternatif strategi berupa SO, ST, WO, dan WT sebagai berikut :

Strategi SO :

- Memanfaatkan lahan tambak yang tersedia dengan berbagai alternatif usaha budidaya komoditas lainnya yang tidak memerlukan modal besar dan resiko yang tinggi untuk memenuhi keperluan sehari-hari. Seperti memanfaatkan kolam tambak dengan ikan dan udang yang terbawa arus pasang, dengan menjalankan kegiatan ini paling tidak semua fasilitas budidaya (kolam, pintu air, pematang) akan terpelihara fungsinya.
- Merintis kerjasama dengan perusahaan pertambangan untuk mengembangkan alternatif konsep budidaya tambak seperti pengembangan sistem wanamina ataupun mencari komoditas alternatif dalam memanfaatkan lahan tambak. Peran pemerintah daerah sangat diperlukan khususnya dalam menjembatani dengan pihak perusahaan pertambangan.

Strategi WO :

- Memberikan pembimbingan pada peningkatan akses pembudidaya terhadap semua sumber permodalan untuk pengembangan usaha produktif mereka beserta alternatifnya.
- Memberikan modal kerja untuk mencoba usaha alternatif selama kondisi lingkungan untuk budidaya udang belum mendukung.

Strategi ST :

- Melakukan aksi untuk mengembalikan kondisi lingkungan sekitar tambak dimulai dengan menanam pohon mangrove di sekitar tambak dan daerah pinggiran Sungai Kintap sebagai zona penyangga (*buffer zone*).
- Merintis program kerjasama dengan perusahaan pertambangan pada program komitmen pelestarian sumberdaya alam dan percepatan perbaikan kualitas lingkungan pesisir pantai dan Sungai Kintap.

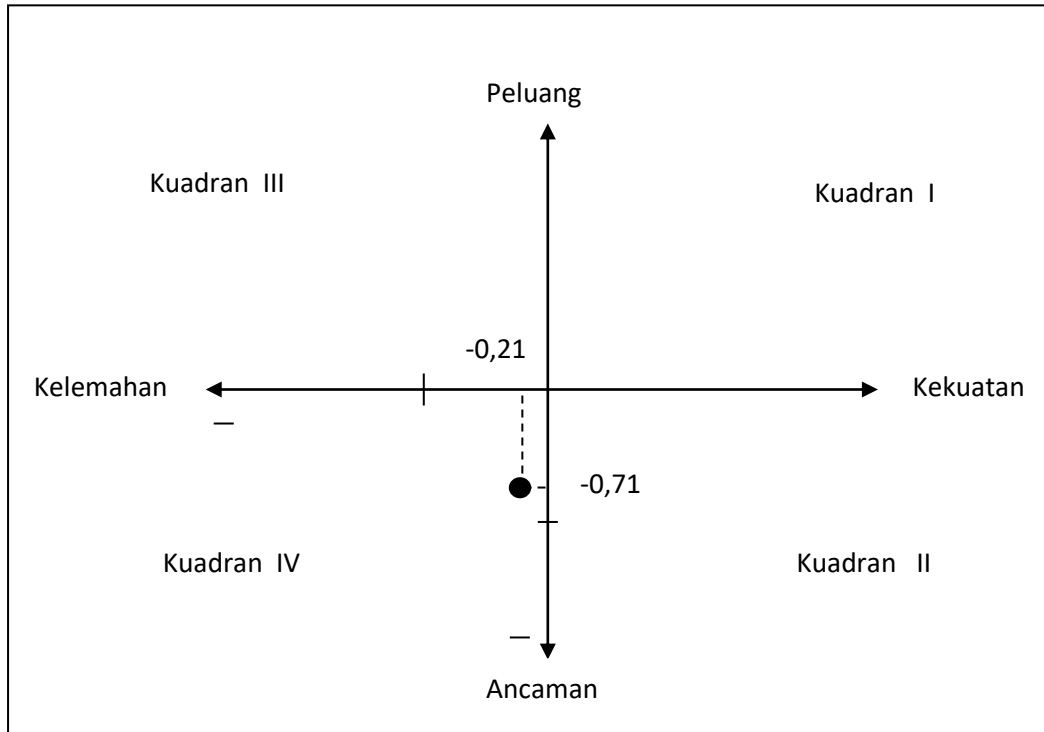
Strategi WT :

- Memberikan penyuluhan untuk membuka wawasan dan menimbulkan kesadaran akan pentingnya dukungan kondisi lingkungan sekitar wilayah tambak, khususnya peran dan fungsi mangrove serta kecukupan luasannya untuk keberhasilan budidaya udang.
- Peningkatan kualitas sumberdaya pembudidaya dengan mengadakan program pelatihan keterampilan alternatif (konsep dan komoditas) budidaya ataupun keterampilan lainnya untuk meningkatkan kreatifitas dan kemandirian mereka.

Analisis Strategi Pengelolaan Budidaya Tambak

Hasil analisis menunjukkan bahwa matrik *grand strategy* usaha tambak udang yang dilakukan oleh pembudidaya Desa Muara Kintap Kabupaten Tanah Laut berada pada posisi (x,y) di kuadran IV yakni pada posisi yang lemah

dengan ancaman lingkungan eksternal yang sangat kuat dimana kekuatan internal masih tidak memiliki kemampuan cukup menghadapinya atau pada strategi defensif. Kondisi ini didasarkan pada hasil perhitungan analisis SWOT yang menunjukkan bahwa ancaman dan kelemahan masih lebih dominan dibandingkan dengan kekuatan dan peluang yang ada. Berdasar pada hasil analisis yang menunjukkan bahwa faktor strategis internal (FSI) dimana nilai Kekuatan < kelemahan (-0,21) dan faktor strategis eksternal (FSE) nilai ancaman > peluang (-0,71).



Gambar 1. Diagram SWOT Budidaya Tambak Udang

Keberhasilan budidaya tambak tidak bisa terlepas dari keberadaan hutan bakau (*mangrove*) disekitarnya, sementara lahan budidaya tambak itu sendiri merupakan hasil konversi hutan bakau dahulunya. Menurut (Gunarto, 2004), perkembangan tambak di Indonesia yang secara intensif (awal tahun 1990) dilakukan melalui upaya konversi hutan mangrove. Luasan lahan tambak yang diiringi dengan berkurangnya luas mangrove pada wilayah pesisir memicu terjadinya kerusakan lingkungan yang merupakan polusi kegiatan pertambakan itu sendiri.

Pada kawasan pesisir Muara Kintap Kabupaten Tanah Laut selain pembukaan lahan tambak yang sudah berlangsung lama ditambah lagi dengan berbagai aktivitas pertambangan dan perkebunan yang potensial terhadap penurunan kualitas lingkungan. Banyaknya faktor eksternal yang menjadi ancaman usaha tambak udang di wilayah ini membuat usaha ini sangat sulit untuk bangkit kembali tanpa didahului oleh adanya program perbaikan kualitas lingkungan secara keseluruhan khususnya pada kawasan hutan bakau yang ada disekitar tambak dan Sungai Kintap.

Kalimantan Selatan yang tidak termasuk sebagai salah satu provinsi yang direkomendasi menjalankan program revitalisasi tambak udang oleh Kementerian Kelautan Perikanan (KKP) Republik Indonesia tentu tidak terlepas dari hasil penilaian kondisi eksisting dari kawasan pesisirnya. Kenyataan ini tentu juga berimplikasi pada ketersediaan program-program pemberdayaan tambak udang yang bersumber dari pemerintah pada kawasan Kalimantan Selatan.

Hasil analisis dalam dokumen RZWP-3-K Kabupaten Tanah Laut tahun 2014, bahwa pada Kecamatan Kintap terdapat mangrove seluas 430,9 ha dan luas lahan yang memenuhi kriteria sesuai dan cukup sesuai untuk budidaya tambak seluas 1.883,6 ha, sehingga dengan asumsi untuk tambak 1 ha diperlukan 2,8 ha mangrove untuk mendegradasi limbah P pada budidaya semi-intensif dan 21,7 ha mangrove pada budidaya tambak intensif, maka kebutuhan mangrove Kecamatan Kintap adalah 4.843,2 ha untuk tambak semi intensif dan 38.990,9 ha untuk tambak intensif. Berdasarkan kondisi di atas, untuk menjalankan budidaya apakah secara tradisional, semi intensif, dan intensif pada tambak udang maupun dengan sistem wanamina (*silvofishery*) diperlukan perbaikan atau penanaman kembali terlebih dahulu hutan bakau di wilayah tersebut.

Wanamina (*silvofishery*) bisa dijadikan salah satu alternatif yang potensial untuk dikembangkan di wilayah ini, bekerjasama dengan perusahaan pertambangan melalui peran pemerintah daerah, karena pada konsep ini ada keharusan untuk memperbaiki atau menanam kembali hutan bakau bila usaha budidayanya ingin berhasil, dan komitmen serta peran aktif masyarakat sekitar sangat diperlukan. Sebagaimana dikemukakan oleh Barbier (2006) dan Thomason (2006) bahwa peran dan partisipasi masyarakat setempat sangat diperlukan untuk

mengendalikan pengrusakan hutan bakau. Pengelolaan yang berbasis masyarakat terhadap hutan bakau yang ada serta penanaman kembali akan membantu mengurangi dampak terburuk di desa-desa pesisir. Pengembangan suatu lembaga yang mendukung manajemen masyarakat tersebut dapat membantu menghindari pengrusakan dan konflik penggunaan yang berlebihan pada hutan bakau.

Budidaya tambak wanamina ini sangat layak dipertimbangkan sebagai solusi bagi rumah tangga pembudidaya Desa Muara Kintap, karena menurut Fitzgerald (2002), wanamina merupakan pola pendekatan teknis yang cukup baik, yang terdiri atas rangkaian kegiatan terpadu antara kegiatan budidaya ikan dengan kegiatan penanaman, pemeliharaan, pengelolaan dan upaya pelestarian hutan mangrove. Sistem ini memiliki teknologi sederhana, dapat dilakukan tanpa merusak tanaman bakau yang ada dan dapat dilakukan sebagai kegiatan sela (antara), sambil berusaha menghutankan kembali kawasan jalur hijau di daerah pantai yang kritis. Berdasarkan hasil studi lainnya bahwa pemanfaatan mangrove untuk tambak dengan sistem wanamina (*silvofishery*) memberikan tingkat kelayakan yang paling tinggi dibanding untuk pemanfaatan lainnya seperti tambak intensif udang dan produksi arang dan penanaman mangrove serta semua wilayah untuk mangrove (Nuddin, 2011).

KESIMPULAN

Strategi dan program pengembangan usaha budidaya tambak di Desa Muara Kintap berdasar pada kondisi dan permasalahan serta analisis SWOT yang disajikan di atas dapat disarikan sebagai berikut :

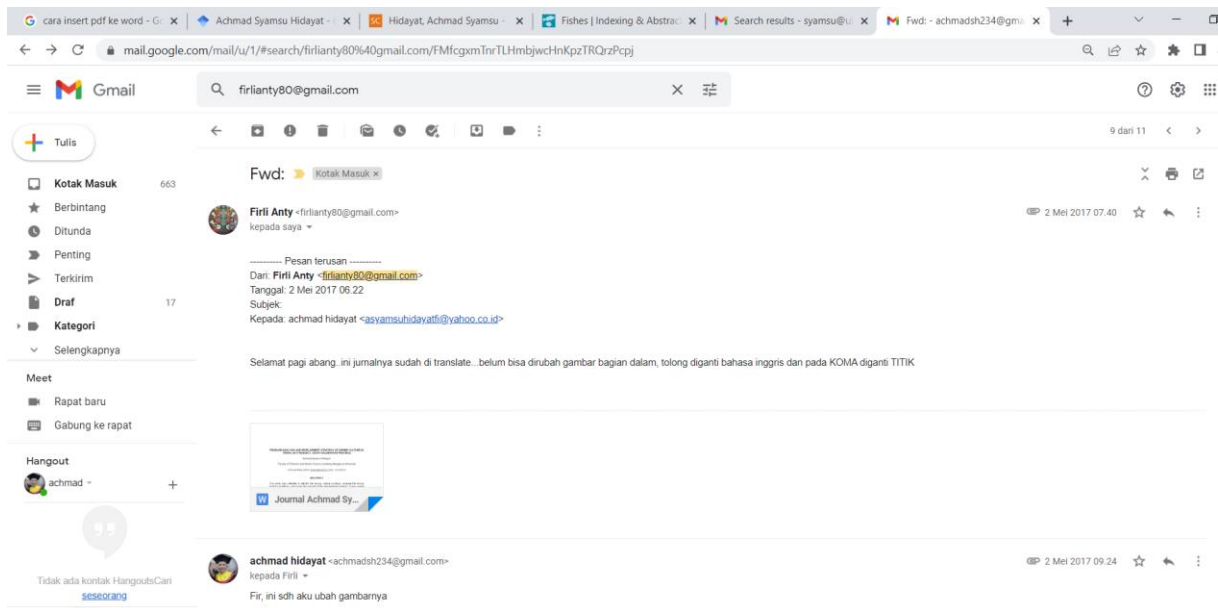
1. Revitalisasi dan konservasi kawasan lindung dan mangrove serta pembatasan pembukaan ruang kawasan pesisir, strategi ini dapat dilakukan dengan program antara lain : (a) Mengembalikan fungsi sempadan pantai Muara Kintap dan sempadan Sungai Kintap dengan revegetasi/reboisasi, (b) Pengendalian pembukaan ruang pada daerah pantai dan bagian hulu Sungai Kintap dengan pembatasan izin dan harus memperhatikan rencana tata ruang wilayah; (c) Pengawasan terhadap pelaksanaan tahapan pasca tambang (reklamasi dan revegetasi).
2. Peningkatan peran dan kepedulian semua pihak (*stake holder*) untuk pelestarian lingkungan pesisir dan laut, strategi ini dapat dilakukan dengan program antara lain : (a) Membentuk dan memfungsikan *Co-Management* dengan melibatkan semua *stake holder* (pemerintah, masyarakat, perusahaan dan LSM); (b) Menyusun program perencanaan, pelaksanaan dan pengawasan secara bersama terhadap pengelolaan lingkungan; (c) Meningkatkan fungsi pengawasan semua instansi yang terkait dengan pemanfaatan sumberdaya di wilayah pesisir dan laut; (d) Peningkatan wawasan dan pengetahuan, pengembangan keterampilan, peningkatan motivasi dan kepedulian masyarakat terhadap lingkungan.
3. Mengembangkan usaha ekonomi produktif masyarakat sekitar khususnya bidang perikanan, strategi ini dapat dilakukan dengan program antara lain : (a) Mengembangkan alternatif budidaya (sistem maupun komoditas) untuk memanfaatkan lahan yang ada; (b) Program percontohan budidaya ikan yang ramah lingkungan dari pemerintah ataupun perusahaan dengan memberdayakan masyarakat setempat.
4. Meningkatkan partisipasi masyarakat dalam pengelolaan lingkungan perairan dan mangrove, strategi ini dapat dilakukan dengan program antara lain : (a) Peningkatan wawasan dan pengetahuan, pengembangan keterampilan, peningkatan motivasi dan kepedulian masyarakat terhadap lingkungan (penyuluhan, pelatihan, poster, leaflet, baliho); (b) Pelatihan penanaman dan pembibitan mangrove terhadap masyarakat; (c) Program apresiasi bagi masyarakat yang melakukan pemeliharaan dan penanaman mangrove.

DAFTAR PUSTAKA

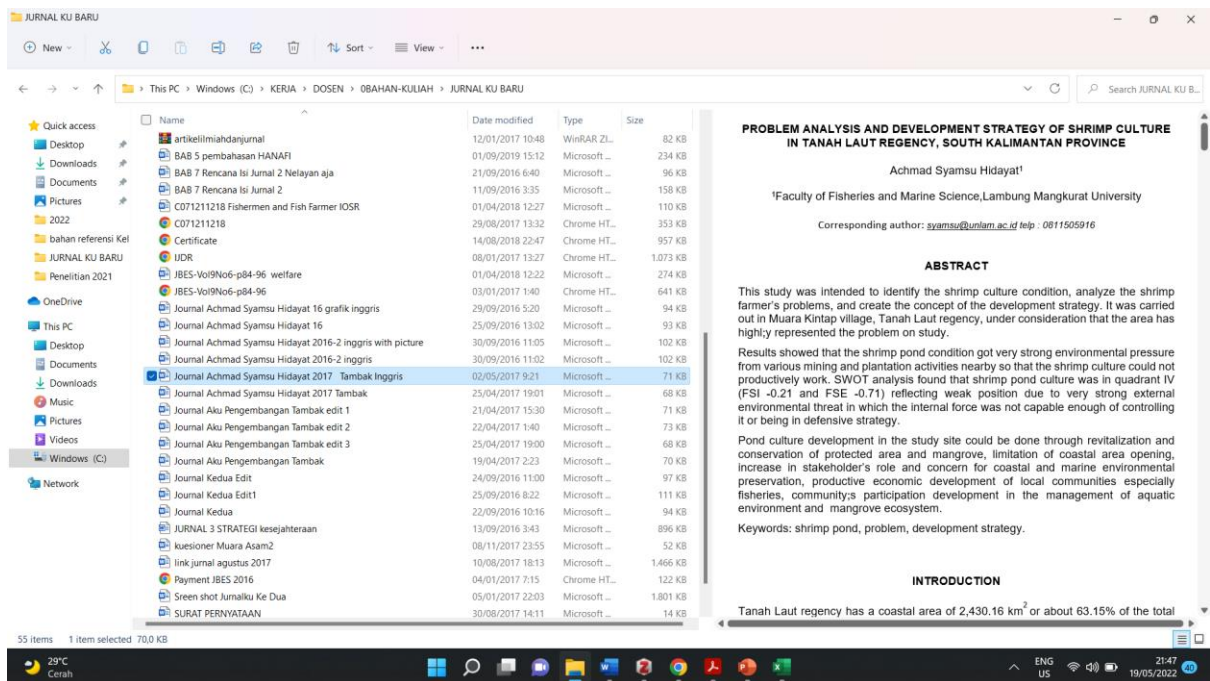
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PROBLEM ANALYSIS AND DEVELOPMENT STRATEGY OF SHRIMP CULTURE IN TANAH LAUT REGENCY, SOUTH KALIMANTAN PROVINCE

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ABSTRACT

This study was intended to identify the shrimp culture condition, analyze the shrimp farmer's problems, and create the concept of the development strategy. It was carried out in Muara Kintap village, Tanah Laut regency, under consideration that the area has highly represented the problem on study.

Results showed that the shrimp pond condition got very strong environmental pressure from various mining and plantation activities nearby so that the shrimp culture could not productively work. SWOT analysis found that shrimp pond culture was in quadrant IV (FSI -0.21 and FSE -0.71) reflecting weak position due to very strong external environmental threat in which the internal force was not capable enough of controlling it or being in defensive strategy.

Pond culture development in the study site could be done through revitalization and conservation of protected area and mangrove, limitation of coastal area opening, increase in stakeholder's role and concern for coastal and marine environmental preservation, productive economic development of local communities especially fisheries, community's participation development in the management of aquatic environment and mangrove ecosystem.

Keywords: shrimp pond, problem, development strategy.

INTRODUCTION

Tanah Laut regency has a coastal area of 2,430.16 km² or about 63.15% of the total regency area. This regency possesses large potential of fisheries resources beside rich mining and mineral resources (coal is distributed as extensive as 314.4 million m² area). Fisheries resources have been long used for various people's productive activities, such as aquaculture and fisheries, as major source of their livelihood.

The exploitation of mining and mineral resources has also occurred fast since early 1990s especially after Regional Autonomy Law of 2004. Based on the Regional Development Planning Board data of South Kalimantan province in 2012, there were 53 mining companies under Permit Holder and Working Agreement on Coal Mining Concession in the coastal area of Tanah Laut regency covering about 58,960 ha (Regional Development Planning Board of Tanah Laut Regency, 2014).

Muara Kintap village, Kintap district, is one of the coastal villages in Tanah Laut regency whose population is mostly fishermen and fish farmers (pond). It, however, occurs also in the area where there is shipping facility of several coal mining companies. The operations of the specific port and the stockpile of coal companies in Kintap river pass the Fish Landing Base of Muara Kintap that is mooring site of the fishermen's boats. These activities certainly give physical impacts on the density of the cruise line in Kintap river. Besides, the operations of several specific ports along the coastalline have caused many coal barges moor to line up for coal loading.

Mining activities have remarkably given positive benefit on the regional economic development of Tanah Laut regency, particularly regional revenue (Brutto Regional Domestic Product of mining sector increased from 4.4 % in 1999 to 9.52% in 2006, 10.90% in 2012, and 25.62% in 2015), but these could also give potential negative impact on the coastal environmental quality degradation (Statistic Office of Tanah Laut regency, 1999, 2006, 2012, and 2016).

Based on the previous study, the traditional fishermen of Muara Kintap, especially bottom gill-netters (fish and shrimp), are not affected by transportation activities of the coal mining in the study sites since their fishing grounds are in 3-6 mile-lane and they use more than one fishing gear so that fishing can be done along the year. Mean monthly income is higher than the minimum wages of South Kalimantan and the fishermen of Bawah Layung village, Kurau district, except that the traditional fishermen of Muara Kintap are still in low category due to access limitation to the fisheries resources (Hidayat, A.S., 2014).

Hidayat, A.S. (2016) also added that the presence of coal mining companies in this area did not significantly raise people's prosperity of Muara Kintap. Their condition is worse than that in Tanah Laut regency as a whole based on education and residential indicators. Nevertheless, the use of health workers for birth control and breastfeeding is better than those in Tanah Laut regency.

Based on the condition above, this study formulated the following issues: how are the conditions, problems of the shrimp pond culture, and its development strategy? The objectives of the study were to identify the pond culture condition, analyze the shrimp farmer's problems, and create the concept of the farmer's pond culture business development strategy in the study site.

METHOD

The study employed survey method with descriptive method. The study site was purposely determined in Muara Kintap village, Kintap district, Tanah Laut regency, South Kalimantan province, that highly represented the problems on study.

Samples used were fisheries households of shrimp pond farmers. Number of samples was determined using Slovin's formula (Sekaran, 2000). Number of pond shrimp farmer's households of Muara Kintap came from local fisheries instructors and related work unit referring to Slovin's formula and using 90% confidence limit (error tolerance of 10%), so that samples collected were 23 respondents of 30 shrimp pond farmer's households.

Data collection was directly done through interviews following the prepared questionnaires and in-depth interviews to the key person. The analysis of pond culture activity condition and problems in the study site was conducted descriptively based on field study supported with relevant previous findings. Preparation of management strategy concept to shrimp farming business in study area used strength, weakness, opportunity and threat (SWOT) analyses (Rangkuti, 2005).

RESULTS

4. Respondent Characteristics

The pond farmer respondents were 25-65 years old, in which 57% belonged to very productive age, 26 - 45 years old. The shrimp farmer's formal education generally (79%) finished Elementary School education. All respondents are immigrants from Maros, South Sulawesi even though their arrival in this area does not simultaneously reflect their duration variations of inhabiting the area. Meanwhile, 65% of them have lived there between 16-25 years.

Fish farmer respondents on study possess relatively large dependents based on number of members in a family. Most of them (74%) had more than 4 family members, and only 26% had 4 family members.

5. Pond Culture Business Condition and Problems

Major facility supporting the pond culture in this area was irrigation as pond water inlet and outlet. It was built around 1999-2000 from Japanese Government's Aid Program, Sector Program Loan (SPL)-OECF, used for Pond Development and Hatchery Program. The irrigation facility condition is now not well-maintained, especially on the outlet part flowing to Kintap river, due to silting so that water exchange has not worked well. Similar condition also happened in the lower part of the irrigation (inlet) facing the sea and flowing to the main irrigation channel.

Pond culture business in Muara Kintap, Tanah Laut regency, has not nowadays been intensively run by the owner. The farmers seemed to be no longer dare to stock the shrimp seeds in their pond due to very high mortality after few weeks of stocking. This failure happened in the last few years and made the farmers be not able to afford their new pond culture activity.

The termination of shrimp pond culture activities also occurred in other pond areas of Tanah Laut regency. The indication of low shrimp culture activities appeared from the termination of fisheries company operations in shrimp culture and trading (*cold storage*), both inter-island and export. In 2000, there were 14 fisheries companies actively doing export and inter-island tradings, one of which, PT Suri Tani Tani Pemuka, also ran its own pond culture business. Nevertheless, there were only 5 companies left in 2007 that were still conducting their business under the recommendation of Tanah Laut Marine and Fisheries Services to prolong the Fisheries Business Permit (Marine and Fisheries Services of Tanah Laut regency, 2008). In 2010, the fisheries industries (*cold storage*) operating in Tanah Laut regency fell to 4 companies, PT. Ebi Mas Besar, PT. Borneo Surya Abadi, PT. Karimata Timur, and PT. Bumi Menara Internusa (Regional Development Planning Board of Tanah Laut Regency, 2014).

Direct interviews with several community leaders found that pond culture business in this area has been unproductive since 2007 due to very high mortality from disease infection. It is in line with the interviews for the farmer respondents that in the last several years they were no longer dare to stock shrimp seeds in the pond because of repeated failures.

The fisheries production of Tanah Laut regency from pond culture in 2007 was 1,661.10 tons from the stocking area of 1,940.30 ha with a productivity of 856.10 kg/ha/y. In 2011, the pond production drastically fell to 199.22 tons from total pond area of 1,759.36 ha with a productivity of 113.24 kg/ha/y (Regional Development Planning Board of Tanah Laut Regency, 2014).

No operation of the shrimp pond culture business was also physically known from unmaintained pond plot, and damaged dyke, water inlet-outlet, and guard house. Transportation access to the pond area was mostly damaged so that it was difficult to visit the houses in the area. Dyke damages mostly occurred in the pond area along Kintap river, and even some areas have become mooring site of barges and tug boats lining up in the coal specific port. Small number of ponds was operated by the farmers rearing fish and shrimps that entered the pond through tidal current, and the yield was used for daily consumption.

Previous study in 2007 entitled "*Study Post-Stock File and Coal Specific Port in The Coastal Area*" concluded that coastal area degradation in Tanah Laut regency tended to result from terrestrial ecosystem degradation (erosion and pollution) into the coastal area due to catchment area destruction. This destruction yields increased water mass disturbance towards the downstream and raises the river water discharge diluting the coastal water

salinity. Habitat and mangrove ecosystem destruction from salinity dilution and land conversion make the coast lose the natural sediment trap system that results in reduction or loss of terrestrial forming ability seawards through sedimentation (Marine and Fisheries Services of Tanah Laut regency, 2008).

Analysis on Coastal Area Zonation and Small Islands preparation of Tanah Laut regency of 2014 found that main limiting factor for pond culture area development in Tanah Laut regency was sufficiently low water salinity as a result of many rivers flowing to this area, especially in rainy season. Other factor was the impact of water pollution, especially ponds near the river around palm oil plantation area, mining sites, port, residential area potentially yielding water pollution. Besides, low topographic condition of the pond area makes it be easily flooded in high rainfalls and high tides (Regional Development Planning Board of Tanah Laut Regency, 2014).

Water quality measurements in 2012 at 4 points around Muara Kintap indicated very low water salinity, 6.0 ppm at 115°15' 44.919" E and 3°53' 41.136", 10.0 ppm at 115°15' 26.153" E and 3°53' 44.134", 3 ppm at 115°15' 37.394" E and 3°53' 32.736", and 5.0 ppm at 115°14'58.641" E and 3°53' 44.843", respectively (Regional Development Planning Board of Tanah Laut Regency, 2014). According to Al Qadri (1999), for fish culture development, the range of 20–26 ppm is categorized as suitable enough and 27–32 ppm as suitable and for seaweed development, the salinity of >22 ppm is categorized as suitable for cultured fish growth.

The diversity index of phytoplankton in Tanah Laut regency ranged from 0 – 2.427, and thus, based on Magurran (1988), the phytoplankton community structure in the study sites was categorized as unstable to more stable community conditions, while based on Wilhm and Dorris (1968), all waters of the study site could be categorized as being moderately polluted with diversity index range between 1.0 – 3.0. Furthermore, the heavy metals analyzed in this study were iron (Fe), cadmium (Cd), copper (Cu), lead (Pb), and mangan (Mn). Laboratory analysis demonstrated that all locations measured had higher Fe, Mn, and Cu than the standard threshold established by the Decree of Living Environmental Minister No. 51/2004 (Regional Development Planning Board of Tanah Laut Regency, 2014).

Several water quality parameters above reflect that failures in shrimp pond culture activities are caused by decline in water quality condition. This condition could be improved through improvement of entire environmental quality, and for this, strong efforts are needed from all stakeholders and under high cost as well (Regional Development Planning Board of Tanah Laut Regency, 2014).

Pond Culture Household's Income

The pond culture business that cannot be expected to provide some income to the shrimp farmers of Muara Kintap makes them have to find other income source, such as catching crabs, making fishing gear, workman service, and selling fish to support their families. Even the pond area of Muara Kintap, the sub-village 5 and 6, directly bordering with the palm oil plantation area of PT. Kintap Jaya Watindo (PT. KJW) was partly sold for IDR 20,000,000 per Ha. Similar condition also occurred for the pond area near the specific ort of PT. SSDK.

The fish farmers near the coal specific port area (sub-village 8 and 9) worked as coal mining labors. This work was done by collecting coal with a price of IDR, 3,000,-per bag, and they could earn between 150,000 to IDR. 300,000,- per working daya. However, the work could not be carried out everyday since it takes very large energy. Working as field mining labor only sustained until the end of 2013, then they could do it anymore because the activity was considered as illegal job by the authorities.

Other jobs that could be taken by the people near the coal companies were security, port checker, and ship mooring binder. These jobs could give the people an income between IDR. 2,000,000,- to IDR. 3,000,000,- per month. Nevertheless, not many people could be involved in this job, and so far only about 6 people did. Other job taken was coal-loading barge controller going out the rivermouth of Kintap. This work was taken by fishermen with about 7 GT-boat involving 4 - 5 people with a payment of IDR. 1,500,000,- per trip.

Number of local people that could work in this mining company is more or less in line with the previous study that the presence of coal mining companies did not significantly have positive impact on the working opportunity for local community and did not also make the economic structure develop around the mining area (Siska, 2013). If there is working opportunity for local community, it would usually be inhibited by education level and skill (Ilmi Hidayat, 2010) and very few people could enter the mining field (Harini and Ariyanto, 2011). Low education level of the fishermen's and fish farmer's households reflects the common education condition of Indonesia coastal villagers. It is in agreement with Muflikhati (2010) that fishermen's prosperity level is considered as very low educational indicator. Prihandoko S., et al. (2012) more strongly stated that fishermen in the north part of west Java averagely followed the formal education only about 5 years or similar to year 5 of the elementary school.

In contrast, Kitula (2006) found that the presence of large-scaled mining company in Gieta District, Tanzania, has given good benefit to the people around the mining, such as working opportunity of 42% respondent, 20.3% increase in road construction, water supply, and school development, food plant supplier of 10.8%, and small-scaled business of 8.1%, and even 33.8% of the population could work in the mining company.

6. SWOT Analysis

Valuation of Internal Strategic Factor

Based on the pond farmer's household analysis, the present study identified several internal factors potentially directly or indirectly affecting the pond culture business in Muara Kintap as major livelihood. The positive internal factors belong to strength components and the negative internal factors become weakness components (Table 1).

Table 1. External factor identification of pond farmer's households in Muara Kintap, Tanah Laut regency.

NO	Strategic Factor	Indicator	S/W
Strength (S)			
1	Good pond culture business experience.	65% of Muara Kintap fish farmers live there for 16-25 years and do the pond culture business in this area; they all came from Sulawesi.	W1
2	Large pond area availability.	Muara Kintap fish farmer s have sufficiently large pond areas, averagely 2-4 ha, and even some had a dozen ha.	W2
3	Availability of irrigation facility	there is irrigation in the pond areas of Muara Kintap functioning as water exchange facility.	W3
4	Strong business will and effort.	Meeting and interviews with the shrimp farmers of Muara Kintap indicate their strong desire to go back doing the shrimp culture business again.	W4
Weakness (W)			
1	Very low business capital capability.	Repeated failures have made the farmers of Muara Kintap be no longer able to do the intensive shrimp seed stocking.	W1
2	Low education and skill.	79% of Muara Kintap farmers only finished elementary school level.	W2
3	Culture facility assets are not well managed.	Culture facilities, such as pond, dyke, water inlet, guard house, and others, were not well-maintained condition.	W3
4	Low awareness of the importance of enough mangrove area presence as culture success requirements.	Simultaneous opening of pond area did not enough consider the ration of mangrove carrying capacity and pond culture.	W4
5	Getting used to the government's aid program.	Getting used to the government's aid program has made the farmers be less self-support and creative.	W5

Source: processed primary data.

Evaluation on External Strategic Factors

Positive external factors belong to opportunity components, while the negative ones become threats as presented in Table 2.

Table 2. External factor identification of pond farmer's households in Muara Kintap, Tanah Laut regency.

NO	Strategic Factor	Indicator	O/T
Opportunity (O)			
1	Continuous market demand for shrimps.	Decreased cultured shrimp production at the national level and import prohibition make market demand be ever-opened.	O1
2	Shrimp price is relative stable and tends to be better	Harvest failures in several other countries make the shrimp price get better: IDR. 42,000,-/kg (52 ind/kg) in 1010 became IDR. 52,000/kg in 2011 and IDR. 86,000,-/kg in 2013. (Head of Shrimp Club Indonesia (SCI) of Eastern Indonesia).	O2

NO	Strategic Factor	Indicator	O/T
3	Transportation facility is getting better.	Road reconstruction to the city was better using hotmix asphalt.	O3
4	the presence of provisions for mining companies to empower local communities	Act Numbered 4/ 2009 that requires the IUP and IUPK holders to develop the development program and the community empowerment, and the companies have not touched on the pond business.	O4
Threat (T)			
1	Environmental carrying capacity degrades as a result of high mining activities around.	Rapid development of the economic activity in this area has made the mangrove area and water catchment be highly reduced resulting in decreased aquatic environmental quality for aquaculture.	T1
2	Disease threat infecting the shrimp seeds.	Previous experience of Muara Kintap shrimp farmers related with mass mortality of shrimp seeds after stocking.	T2
3	Procurement program of cultivation production facilities from government is very limited.	Program allocation for pond culture business is very limited, and even absent in the last several years.	T3
4	Low availability of shrimp seeds from nature.	In the last 4-5 years, fries were very few and almost no fisherman was looking for them as well.	T4
5	Increasing environmental pressures as a result of increased plantation activity and other economic activity.	Various activities on land, upstream, and coastal waters discharge wastes potential to water pollution.	T5

Source: processed primary data.

Valuation of Internal and External Factors

To measure the effect of internal and external factors on pond culture business management in Muara Kintap, Internal Factors Analysis Summary (IFAS) table and External Factors Analysis Summary (EFAS) table were employed.

Based on the IFAS analysis on the internal factor of pond farmer's households, it was apparent that the fish farmers of Muara Kintap, Tanah Laut reGENCY, basically have some strengths, such as business experience, owner of large pond area with irrigation, but this basic capital is not well-maintained, so that the strength is lower than other various weakness factors (Table 3).

Table 3. Internal factor analysis of pond farmer's households in Muara Kintap, Tanah Laut reGENCY.

No	Variable	Score	Rating	Score x Rating
1	Strength			
	High experience in pond culture business.	0.12	3.5	0.42
	Availability of large pond area	0.14	2.5	0.35
	Availability of irrigation.	0.12	2.5	0.3
	Strong desire and effort.	0.1	3	0.3
	Sub-total	0.48		1.37
2	Weakness			
	Very low business capital capability.	0.12	-3.5	-0.42
	Low education and skill.	0.1	-3	-0.3
	Culture facility assets are in poor maintenance.	0.12	-3	-0.36
	Low awareness of the importance of sufficient mangrove area as requirements for aquaculture success.	0.1	-3	-0.3
	Getting used to the government's aid program.	0.08	-2,5	-0.2
	Sub-total	0.52		-1.58
	Total	1.00		-0.21

Source: processed primary data of 2015

EFAS analysis on external factors potentially affecting the culture business run by the farmer's households of Muara Kintap found that negative external factors or threats were higher than positive factors or opportunity. This

result is obtained under consideration of ideal condition requirements of an area for aquaculture, either present or future conditions. Detail EFAS analysis on aquaculture business is presented in Table 4.

Table 4. External factor analysis of pond farmer's households in Muara Kintap, Tanah Laut regency.

No	Variable	Score	Rating	Score x Rating
1	Opportunity			
	Continuous market demand for shrimp.	0.1	3	0.3
	shrimp price is relatively stable and tend to be better.	0.1	3	0.3
	Infrastructure and means of transportation are getting better.	0.1	3	0.3
	the presence of provisions for mining companies to empower local communities.	0.12	3	0.36
	Sub-total	0.42		1.26
2	Threat			
1	Environmental carrying capacity decreases as a result of high mining activities around.	0.14	-4	-0.56
2	Disease threat infecting the shrimp seeds.	0.1	-3	-0.3
3	Procurement program of cultivation production facilities from government is very limited.	0.1	-3	-0.3
4	Very low natural seeds.	0.1	-2.5	-0.25
5	Increasing environmental pressure as a result of increased plantation activities and other economic activities.	0.14	-4	-0.56
	Sub-total	0.58		-1.97
	Total	1.00		-0.71

Source: processed primary data.

Alternative Strategy

IFAS and EFAS analyses were taken as basis to do SWOT analysis in order to know what position the pond culture business of Muara Kintap farmer's households was against the owned strength, weakness, opportunity, and threat. Based on the approach, various alternative strategies as SO, ST, WO, and WT were created as follows:

SO-Strategy :

- To use the available pond area through implementation of various alternative cultivation of other commodities that need no large capital and have low risk in order to meet daily needs, such as the use of ponds with fish and shrimps trapped in tidal current. This activity could at least maintain some of the culture facilities, such as pond, water inlet, and dyke.
- To find collaboration with mining companies to develop alternative concept of pond culture, such as silvofishery system development or searching for alternative commodities in the pond area. Thus, the role of the regional government is highly needed, particularly in communicating with the mining companies.

WO-Strategy :

- To guide the farmers on access development over all capital sources for their productive business and its alternatives.
- To provide working capital to run an alternative business during unfavorable environmental conditions for shrimp culture.

ST-Strategy :

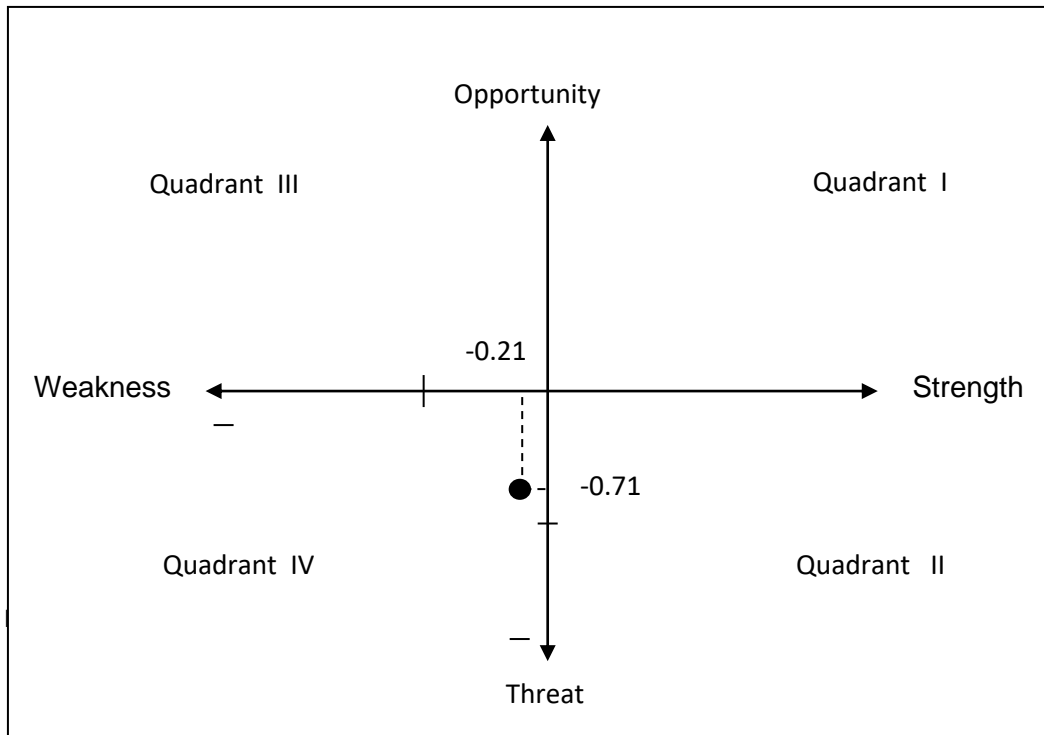
- To actively initiate activities to recover the environmental conditions through mangrove planting around the pond area and along the margin of Kintap river as *buffer zone*.
- To communicate collaboration program with mining companies on natural resources conservation commitment program and environmental quality rehabilitation acceleration program of coastal areas and Kintap river.

WT-Strategy :

- To provide counseling in order to open the insight and build the awareness of the importance of good environmental conditions around the pond area, especially mangrove ecological roles and its minimum areal maintenance for the success of shrimp culture.
- To build the farmer's resources quality through training program on alternative culture skill (concept and commodity) or other skill to develop their creativity and self-support.

Analysis of Pond Culture Management Strategy

This strategy indicated that the grand strategy matrix of shrimp culture done by the farmers of Muara Kintap, Tanah Laut regency occurred at quadrant IV (x,y), the weak position under very strong external environmental threat in which the internal strength was still not enough capable of controlling it or in defensive strategy. This condition was based on SWOT analysis reflecting that the threat and weakness are more dominant than the current strength and opportunity. It shows the internal strategic factor with lower strength than weakness (-0.21) and the external strategic factor with higher threat than opportunity (-0.71).



The success of pond culture cannot be separated from the occurrence of mangrove forests around, while the culture pond area itself is the output of previous mangrove forest conversion. According to Gunarto (2004), pond development intensively conducted in Indonesia (early 1990) through mangrove forest conversion effort. Increased pond area with reduced mangrove forest in the coastal area have triggered the environmental damages as pollution of aquaculture activities.

Besides pond area opening in the coastal area of Muara Kintap, Tanah Laut, and there were also various mining and plantation activities potentially contributing to the environmental quality degradations. High number of external factors threatening the shrimp culture business in the area makes this activity very difficult to recover without starting from environmental quality rehabilitation program, particularly mangrove forests around the ponds and Kintap river.

South Kalimantan that does not belong to one of the provinces recommended to do shrimp pond revitalization program by the Ministry of Marine Affairs and Fisheries of Indonesia Republic is not certainly separated from the current coastal area condition evaluation. This fact is also, of course, implied in the availability of government's shrimp pond empowerment programs for South Kalimantan from the central government.

Analysis of Coastal Area and Small Islands Zonation Planning of Tanah Laut regency in 2014 indicated that Kintap district had 430.9 ha of mangrove forest with 1,883.6 ha of pond area under sufficiently suitable and suitable categories for aquaculture. Thus, if 1 ha of fish pond needs 2.8 ha of mangrove forest to degrade P waste in semi-intensive culture and 21.7 ha of mangrove area in intensive pond culture, Kintap district requires 4,843.2 ha for semi-intensive pond and 38,990.9 ha for intensive pond. Based on condition above, to implement shrimp culture activities, either traditional, semi-intensive, intensive or silvofishery (*silvofishery*) system, mangrove forest rehabilitation or reforestation should be done.

Silvofishery (*silvofishery*) can be taken as one of the alternatives potential to develop in this area through collaboration with mining companies under government's active roles, since this concept has an obligation to improve or replant the mangrove forest for the success of culture activities, and for this, nearby community's commitment and active role are highly needed. It is in agreement with Barbier (2006) and Thomason (2006) that local community's role and participation are highly needed to control the mangrove forest from destructions. The community-based management of the present mangrove forest and replanting will help reducing the worst impact

on the coastal area. Institutional development supporting the community management could also help preventing destructions and conflicts from excessive use of the mangrove forests.

This silvofishery pond culture is very feasible to be considered as a problem solution for the farmer's households in Muara Kintap, because silvofishery is a sufficiently good technical approach pattern (Fitzgerald, 2002), consisting of a series of integrated activities between fish culture activities and mangrove forest planting, rearing, and conservation efforts. This system has simple technology, can be done without damaging the present mangrove forest, and as an interval activity while attempting to reforest the green belt area in the critical coasts. Based on other studies, mangrove utilization for fish ponds should be done under silvofishery system that gives the highest feasibility level relative to other utilization, such as intensive shrimp pond, charcoal production, mangrove planting, and prioritized mangrove forests (Nuddin, 2011).

CONCLUSION

Based on condition, problem and SWOT analysis, the development strategy and program of pond culture business in Muara Kintap village were as follows:

5. The revitalization and conservation of protected area and mangrove and limitation of coastal area opening. This strategy could be done by (a) returning the role of Muara Kintap beach border and Kintap river border through revegetation/reforestation; (b) controlling the space opening in the coastal area and the upstream of Kintap river through permit restrictions and spatial plans regulations; and (c) control on post-mining phase implementation (reclamation and revegetation).
6. Stakeholder's role and concern development for coastal area and marine environmental preservation. This strategy could be done through the following program: (a) forming and functioning Co-Management by involving all stakeholders (government, community, company, and NGO); (b) making simultaneous planning, implementation, and monitoring programs on environmental management; (c) developing monitoring functions of all related institutions through resources utilization in the coastal and marine area; (d) Insight and knowledge development, skill increment, development of community's motivation and concern on environment.
7. Nearby community's productive economic activity development. This strategy could be done through (a) alternative aquaculture development (system or commodity) to make use of the available area; (b) Environmentally-friendly fish culture **pilot** program of the government or company through local community empowerment.
8. Community's participation development in aquatic environmental and mangrove management. This strategy could be done through the following program: (a) insight and knowledge development, skill improvement, and development of community's motivation and concern on the environment (counseling, training, poster, leaflet, baliho); (b) Training on mangrove planting and mangrove nursery; (c) Appreciation program for the community practicing mangrove culture and planting.

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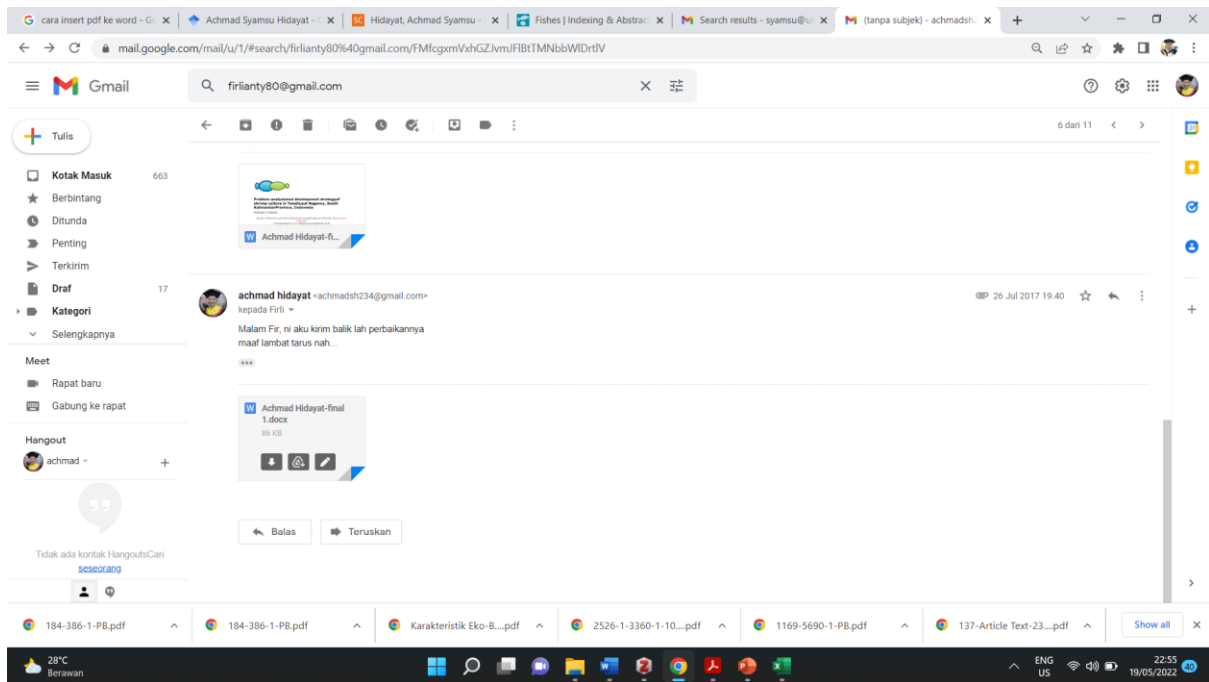
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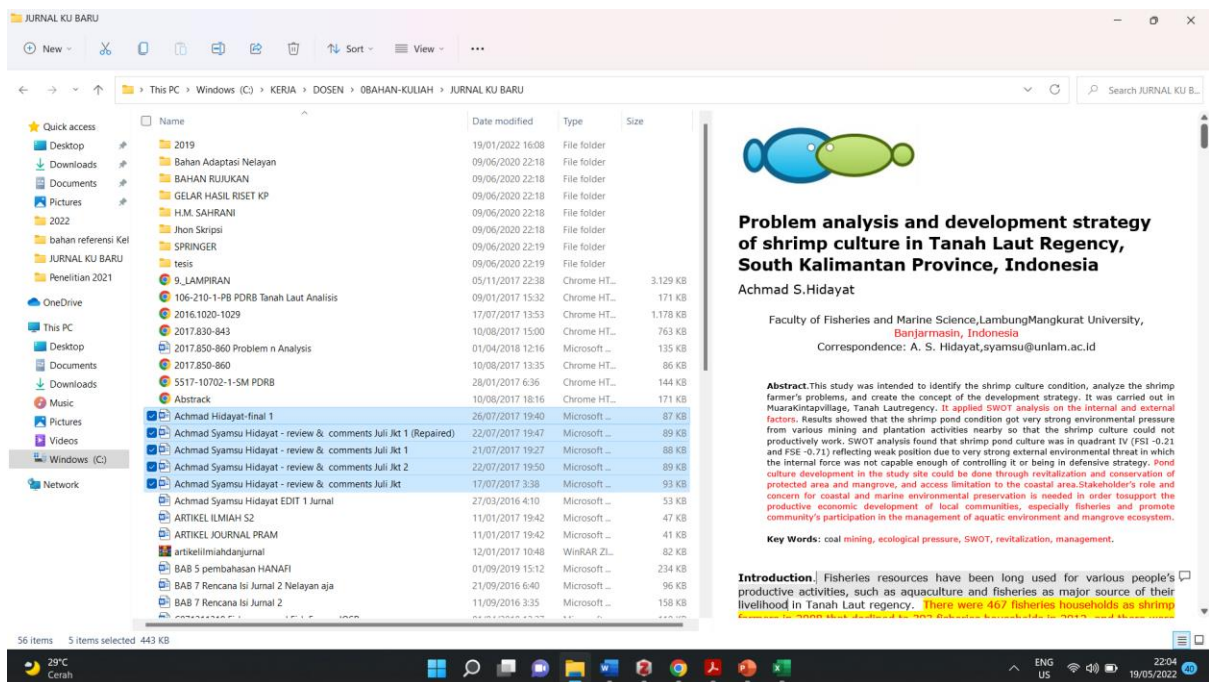
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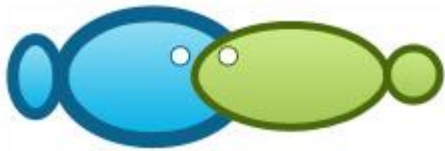
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Problem analysis and development strategy of shrimp culture in Tanah Laut Regency, South Kalimantan Province, Indonesia

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Abstract. This study was intended to identify the shrimp culture condition, analyze the shrimp farmer's problems, and create the concept of the development strategy. It was carried out in Muara Kintap village, Tanah Laut regency. It applied SWOT analysis on the internal and external factors. Results showed that the shrimp pond condition got very strong environmental pressure from various mining and plantation activities nearby so that the shrimp culture could not productively work. SWOT analysis found that shrimp pond culture was in quadrant IV (FSI -0.21 and FSE -0.71) reflecting weak position due to very strong external environmental threat in which the internal force was not capable enough of controlling it or being in defensive strategy. Pond culture development in the study site could be done through revitalization and conservation of protected area and mangrove, and access limitation to the coastal area. Stakeholder's role and concern for coastal and marine environmental preservation is needed in order to support the productive economic development of local communities, especially fisheries and promote community's participation in the management of aquatic environment and mangrove ecosystem.

Key Words: coal mining, ecological pressure, SWOT, revitalization, management.

Introduction. Fisheries resources have been long used for various people's productive activities, such as aquaculture and fisheries as major source of their livelihood in Tanah Laut regency. Terdapat 467 Rumah Tangga Perikanan (RTP) pembudidaya udang pada tahun 2008 dan menjadi 393 RTP pada tahun 2012, serta terdapat 3.749 RTP penangkapan ikan pada tahun 2008 menjadi 1.979 RTP pada 2012. Sejalan dengan hal di atas, berdasarkan data tahun 2007 produksi perikanan budidaya tambak Kabupaten Tanah Laut sebesar 1.661,10 ton dari areal luas tebar sebesar 1.940,30 ha dengan produktifitas 856,10 kg/ha/tahun. Kemudian pada tahun 2011, produksi tambak mengalami penurunan yang sangat tajam yaitu 199,22 ton dari luas total tambak 1.759,36 ha dengan produktifitas 113,24 kg/ha/tahun (Bappeda Kabupaten Tanah Laut, 2013).

Beside high fisheries resources availability, this regency possesses also rich mining and mineral resources (coal is distributed as extensive as 314.4 million m²area). Nevertheless, high mining activities have made shrimp culture cannot be productive.

The exploitation of mining and mineral resources has also occurred fast since early 1990s especially after Regional Autonomy Law of 2004. Based on the Regional Development Planning Board data of South Kalimantan province in 2012, there were 53 mining companies under Permit Holder and Working Agreement on Coal Mining Concession in the coastal area of Tanah Laut regency covering about 58,960 ha (Regional Development Planning Board of Tanah Laut Regency 2014).

Muara Kintap village, Kintap district, is one of the coastal villages in Tanah Laut regency whose population is mostly fishermen and fish farmers (pond). It, however, occurs also in the area where there is shipping facility of several coal mining companies. The operations of the specific port and the stockpile of coal companies in Kintap river pass the Fish Landing Base of Muara Kintap that is mooring site of the fishermen's boats. These activities certainly give physical impacts on the density of the cruise line in Kintap river. Besides, the operations of several specific ports along the coastalline have caused many coal barges moor to line up for coal loading.

Mining activities have remarkably given positive benefit on the regional economic development of Tanah Laut Regency, particularly regional revenue (Brutto Regional Domestic Product of mining sector increased from 4.4 % in 1999 to 9.52% in 2006, 10.90% in 2012, and 25.62% in 2015), but these could also give potential negative impact on the coastal environmental quality degradation (Statistic Office of Tanah Laut regency, 1999, 2006, 2012, and 2016).

Based on the previous study, the traditional fishermen of Muara Kintap, especially bottom gill-netters (fish and shrimp), are not affected by transportation activities of the coal mining in the study sites since their fishing grounds are in 3-6 mile-lane and they use more than one fishing gear so that fishing can be done along the year. Mean monthly income is higher than the minimum wages of South Kalimantan and the fishermen of Bawah Layung village, Kurau district, except that the traditional fishermen of Muara Kintap are still in low category due to access limitation to the fisheries resources (Hidayat 2014).

Hidayat (2016) also added that the presence of coal mining companies in this area did not significantly raise people's prosperity of Muara Kintap. Their condition is worse than that in Tanah Laut regency as a whole based on education and residential indicators.

Based on the condition above, this study formulated the following issues: how are the conditions, problems of the shrimp pond culture, and its development strategy? The objectives of the study were to identify the pond culture condition, analyze the shrimp farmer's problems, and create the concept of the farmer's pond culture business development strategy in the study site.

Material and Method. The study employed survey method with descriptive method. The study site was purposely determined in Muara Kintap village, Kintap district, Tanah Laut regency, South Kalimantan province, that highly represented the problems on study.

Samples used were fisheries households of shrimp pond farmers. Number of samples was determined using Slovin's formula (Sekaran, 2000). Number of pond shrimp farmer's households of Muara Kintap came from local fisheries instructors and related work unit referring to Slovin's formula and using 90% confidence limit (error tolerance of 10%), so that samples collected were 23 respondents of 30 shrimp pond farmer's households.

Data collection was directly done through interviews following the prepared questionnaires and in-depth interviews to the key person. The analysis of pond culture activity condition and problems in the study site was conducted descriptively based on field study supported with relevant previous findings. Preparation of management strategy concept to shrimp farming business in study area used strength, weakness, opportunity and threat (SWOT) analyses (Rangkuti 2005). This method includes internal and external factor identification, determination and formulation of strategic factors, and determination of SWOT strategy alternatives. **Internal factors have positive contribution (strength) and negative contribution (weakness). External factors have also the same features, positive (opportunity) and negative (threat). Internal Factors Analysis Strategy (IFAS) and External Factors Analysis Strategy (EFAS) were employed for internal and external factors, respectively.**

Results and Discussion

Respondent characteristics. The pond farmer respondents were 25-65 years old, in which 57% belonged to very productive age, 26-45 years old. The shrimp farmer's formal education generally (79%) finished Elementary School education. All respondents are immigrants from Maros, South Sulawesi even though their arrival in this area does not simultaneously reflect their duration variations of inhabiting the area. Meanwhile, 65% of them have lived there between 16-25 years.

Fish farmer respondents on study possess relatively large dependents based on number of members in a family. Most of them (74%) had more than 4 family members, and only 26% had 4 family members.

Pond culture business condition and problems. Major facility supporting the pond culture in this area was irrigation as pond water inlet and outlet. It was built around 1999-2000 from Japanese Government's Aid Program, Sector Program Loan (SPL)-OECF, used for Pond Development and Hatchery Program. The irrigation facility condition is now not well-maintained, especially on the outlet part flowing to Kintap river, due to silting so that water exchange has not worked well. Similar condition also happened in the lower part of the irrigation (inlet) facing the sea and flowing to the main irrigation channel.

Pond culture business in Muara Kintap, Tanah Laut regency, has not nowadays been intensively run by the owner. The farmers seemed to be no longer dare to stock the shrimp seeds in their pond due to very high mortality after few weeks of stocking. This failure happened in the last few years and made the farmers be not able to afford their new pond culture activity.

The termination of shrimp pond culture activities also occurred in other pond areas of Tanah Laut regency. The indication of low shrimp culture activities appeared from the termination of fisheries company operations in shrimp culture and trading (cold storage), both inter-island and export. In 2000, there were 14 fisheries companies actively doing export and inter-island tradings, one of which, PT Suri Tani Tani Pemuka, also ran its own pond culture business. Nevertheless, there were only 5 companies left in 2007 that were still conducting their business under the recommendation of Tanah Laut Marine and Fisheries Services to prolong the Fisheries Business Permit (Marine and Fisheries Services of Tanah Laut regency 2008). In 2010, the fisheries industries (cold storage) operating in Tanah Laut regency fell to 4 companies, PT. Ebi Mas Besar, PT. Borneo Surya Abadi, PT. Karimata Timur, and PT. Bumi Menara Internusa (Regional Development Planning Board of Tanah Laut Regency 2014).

Direct interviews with several community leaders found that pond culture business in this area has been unproductive since 2007 due to very high mortality from disease infection. It is in line with the interviews for the farmer respondents that in the last several years they were no longer dare to stock shrimp seeds in the pond because of repeated failures.

The fisheries production of Tanah Laut regency from pond culture in 2007 was 1,661.10 tons from the stocking area of 1,940.30 ha with a productivity of 856.10 kg ha⁻¹ y⁻¹. In 2011, the pond production drastically fell to 199.22 tons from total pond area of 1,759.36 ha with a productivity of 113.24 kg ha⁻¹ y⁻¹ (Regional Development Planning Board of Tanah Laut Regency 2014).

No operation of the shrimp pond culture business was also physically known from unmaintained pond plot, and damaged dyke, water inlet-outlet, and guard house. Transportation access to the pond area was mostly damaged so that it was difficult to visit the houses in the area. Dyke damages mostly occurred in the pond area along Kintap river, and even some areas have become mooring site of barges and tug boats lining up in the coal specific port. Small number of ponds was operated by the farmers rearing fish and shrimps that entered the pond through tidal current, and the yield was used for daily consumption.

Previous study in 2007 entitled "Study Post-Stock File and Coal Specific Port in The Coastal Area" concluded that coastal area degradation in Tanah Laut regency tended to result from terrestrial ecosystem

degradation (erosion and pollution) into the coastal area due to catchment area destruction. This destruction yields increased water mass disturbance towards the downstream and raises the river water discharge diluting the coastal water salinity. Habitat and mangrove ecosystem destruction from salinity dilution and land conversion make the coast lose the natural sediment trap system that results in reduction or loss of terrestrial forming ability seawards through sedimentation (Marine and Fisheries Services of Tanah Laut regency 2008).

Analysis on Coastal Area Zonation and Small Islands preparation of Tanah Laut regency of 2014 found that main limiting factor for pond culture area development in Tanah Laut regency was sufficiently low water salinity as a result of many rivers flowing to this area, especially in rainy season. Other factor was the impact of water pollution, especially ponds near the river around palm oil plantation area, mining sites, port, residential area potentially yielding water pollution. Besides, low topographic condition of the pond area makes it be easily flooded in high rainfalls and high tides (Regional Development Planning Board of Tanah Laut Regency 2014). Water quality measurements in 2012 at 4 points around MuaraKintap indicated very low water salinity, 6.0 ppm at 115°15'44.919"E and 3°53'41.136"S, 10.0 ppm at 115°15' 26.153" E and 3°53'44.134"S, 3 ppm at 115°15'37.394"E and 3°53'32.736"S, and 5.0 ppm at 115°14'58.641" E and 3°53'44.843"S, respectively (Regional Development Planning Board of Tanah Laut Regency 2014). According to Al Qadri (1999), for fish culture development, the range of 20-26 ppm is categorized as suitable enough and 27-32 ppm as suitable and for seaweed development, the salinity of >22 ppm is categorized as suitable for cultured fish growth. The diversity index of phytoplankton in Tanah Laut regency ranged from 0 to 2.427, and thus, based on Magurran (1988), the phytoplankton community structure in the study sites was categorized as unstable to more stable community conditions, while based on Wilhm & Dorris (1968), all waters of the study site could be categorized as being moderately polluted with diversity index range between 1.0 and 3.0. Furthermore, the heavy metals analyzed in this study were iron (Fe), cadmium (Cd), copper (Cu), lead (Pb), and mangan (Mn). Laboratory analysis demonstrated that all locations measured had higher Fe, Mn, and Cu than the standard threshold established by the Decree of Living Environmental Minister No. 51/2004 (Regional Development Planning Board of Tanah Laut Regency 2014).

Several water quality parameters above reflect that failures in shrimp pond culture activities are caused by decline in water quality condition. This condition could be improved through improvement of entire environmental quality, and for this, strong efforts are needed from all stakeholders and under high cost as well (Regional Development Planning Board of Tanah Laut Regency 2014).

Pond culture household's income. The pond culture business that cannot be expected to provide some income to the shrimp farmers of MuaraKintap makes them have to find other income source, such as catching crabs, making fishing gear, workman service, and selling fish to support their families. Even the pond area of Muara Kintap, the sub-village 5 and 6, directly bordering with the palm oil plantation area of PT. Kintap Jaya Watindo (PT. KJW) was partly sold for IDR 20,000,000 per Ha. Similar condition also occurred for the pond area near the specific port of PT. SSDK.

The fish farmers near the coal specific port area (sub-village 8 and 9) worked as coal mining labors. This work was done by collecting coal with a price of IDR.,3,000,-per bag, and they could earn between 150,000 to IDR.300,000,- per working day. However, the work could not be carried out everyday since it takes very large energy. Working as field mining labor only sustained until the end of 2013, then they could not do it anymore because the activity was considered as illegal job by the authorities.

Other jobs that could be taken by the people near the coal companies were security, port checker, and ship mooring binder. These jobs could give the people an income between IDR. 2,000,000,-to IDR. 3,000,000,-per month. Nevertheless, not many people could get these jobs at the coal companies, and so far only about 6 people did. Other job taken was coal-loading barge controller going out the rivermouth of Kintap. This work was taken by fishermen with about 7 GT-boat involving 4-5 people with a payment of IDR. 1,500,000,-per trip.

Number of local people that could work in this mining company is more or less in line with a previous study that the presence of coal mining companies did not significantly have positive impact on the working opportunity for local community and did not also make the economic structure develop around the mining area (Siska 2013). If there is working opportunity for local community, it would usually be inhibited by education level and skill (Ilmi Hidayat 2010) and very few people could enter the mining field (Harini & Ariyanto 2011). Low education level of the fishermen and fish farmer's households reflects the common education condition of Indonesia coastal villagers. It is in agreement with Muflikhati (2010) that fishermen's prosperity level is considered as very low educational indicator. Prihandoko et al (2012) more strongly stated that fishermen in the north part of west Java averagely followed the formal education only about 5 years or similar to year 5 of the elementary school.

In contrast, Kitula (2006) found that the presence of large-scaled mining company in Gieta District, Tanzania, has given good benefit to the people around the mining, such as working opportunity of 42% respondent, 20.3% increase in road construction, water supply, and school development, food plant supplier of 10.8%, and small-scaled business of 8.1%, and even 33.8% of the population could work in the mining company.

SWOT analysis

Valuation of internal strategic factor. Based on the pond farmer's household analysis, the present study identified several internal factors potentially directly or indirectly affecting the pond culture business in Muara Kintap as major livelihood. The positive internal factors belong to strength components and the negative internal factors become weakness components (Table 1).

External factor identification of pond farmer's households in Muara Kintap, Tanah Laut reGENCY

Table 1

<i>No</i>	<i>Strategic factor</i>	<i>Indicator</i>	<i>S/W</i>
<i>Strength (S)</i>			
1	Good pond culture business experience	65% of Muara Kintap fish farmers live there for 16-25 years and do the pond culture business in this area; they all came from Sulawesi	W1
2	Large pond area availability	Muara Kintap fish farmers have sufficiently large pond areas, averagely 2-4 ha, and even some had a dozen ha	W2
3	Availability of irrigation facility	There is irrigation in the pond areas of Muara Kintap functioning as water exchange facility	W3
4	Strong business will and effort	Meeting and interviews with the shrimp farmers of Muara Kintap indicate their strong desire to go back doing the shrimp culture business again	W4
<i>Weakness (W)</i>			
1	Very low business capital capability	Repeated failures have made the farmers of Muara Kintap be no longer able to do the intensive shrimp seed stocking	W1
2	Low education and skill	79% of Muara Kintap farmers only finished elementary school level	W2
3	Culture facility assets are not well managed	Culture facilities, such as pond, dyke, water inlet, guard house, and others, were in not well-maintained condition	W3
4	Low awareness of the importance of enough mangrove area presence as culture success requirements	Simultaneous opening of pond area did not enough consider the ration of mangrove carrying capacity and pond culture	W4
5	Getting used to the government's aid program	Getting used to the government's aid program has made the farmers be less self-support and creative	W5

Source: processed primary data.

Evaluation on external strategic factors. Positive external factors belong to opportunity components, while the negative ones become threats as presented in Table 2.

External factor identification of pond farmer's households in Muara Kintap, Tanah Laut reGENCY

Table 2

<i>No</i>	<i>Strategic factor</i>	<i>Indicator</i>	<i>O/T</i>
<i>Opportunity (O)</i>			
1	Continuous market demand for shrimps	Decreased cultured shrimp production at the national level and import prohibition make market demand be ever-opened	O1
2	Shrimp price is relative stable and tends to be better	Harvest failures in several other countries make the shrimp price get better: IDR. 42,000,-/kg (52 ind/kg) in 1010 became IDR. 52,000/kg in 2011 and IDR. 86,000,-/kg in 2013 (Head of Shrimp Club Indonesia (SCI) of Eastern Indonesia)	O2
3	Transportation facility is getting better	Road reconstruction to the city was better using hotmix asphalt	O3

No	Strategic factor	Indicator	O/T
4	The presence of provisions for mining companies to empower local communities	Act Number 4/2009 that requires the IUP and IUPK holders to develop the development program and the community empowerment, and the companies have not touched on the pond business	O4
<i>Threat (T)</i>			
1	Environmental carrying capacity degrades as a result of high mining activities around	Rapid development of the economic activity in this area has made the mangrove area and water catchment be highly reduced resulting in decreased aquatic environmental quality for aquaculture	T1
2	Disease threat infecting the shrimp seeds	Previous experience of Muara Kintap shrimp farmers related with mass mortality of shrimp seeds after stocking	T2
3	Procurement program of cultivation production facilities from government is very limited	Program allocation for pond culture business is very limited, and even absent in the last several years	T3
4	Low availability of shrimp seeds from nature	In the last 4-5 years, fries were very few and almost no fisherman was looking for them as well	T4
5	Increasing environmental pressures as a result of increased plantation activity and other economic activity	Various activities on land, upstream, and coastal waters discharge wastes potential to water pollution	T5

Source: processed primary data.

Valuation of internal and external factors. To measure the effect of internal and external factors on pond culture business management in Muara Kintap, Internal Factors Analysis Summary (IFAS) table and External Factors Analysis Summary (EFAS) table were employed.

Based on the IFAS analysis on the internal factor of pond farmer's households, it was apparent that the fish farmers of Muara Kintap, Tanah Laut regency, basically have some strengths, such as business experience, owner of large pond area with irrigation, but this basic capital is not well-maintained, so that the strength is lower than other various weakness factors (Table 3).

Table 3
Internal factor analysis of pond farmer's households in Muara Kintap, Tanah Laut regency

No	Variable	Score	Rating	Score x Rating
1	<i>Strength</i>			
	High experience in pond culture business	0.12	3.5	0.42
	Availability of large pond area	0.14	2.5	0.35
	Availability of irrigation	0.12	2.5	0.3
	Strong desire and effort	0.1	3	0.3
	Sub-total	0.48		1.37
2	<i>Weakness</i>			
	Very low business capital capability	0.12	-3.5	-0.42
	Low education and skill	0.1	-3	-0.3
	Culture facility assets are in poor maintenance	0.12	-3	-0.36
	Low awareness of the importance of sufficient mangrove area as requirements for aquaculture success	0.1	-3	-0.3
	Getting used to the government's aid program	0.08	-2.5	-0.2
	Sub-total	0.52		-1.58
	Total	1.00		-0.21

Source: processed primary data of 2015.

EFAS analysis on external factors potentially affecting the culture business run by the farmer's households of Muara Kintap found that negative external factors or threats were higher than positive factors or opportunity. This result is obtained under consideration of ideal condition requirements of an area for aquaculture, either present or future conditions. Detailed EFAS analysis on aquaculture business is presented in Table 4.

Table 4
External factor analysis of pond farmer's households in Muara Kintap, Tanah Laut regency

No	Variable	Score	Rating	Score x Rating
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No	Variable	Score	Rating	Score x Rating
1	<i>Opportunity</i>			
	Continuous market demand for shrimp	0.1	3	0.3
	Shrimp price is relatively stable and tend to be better	0.1	3	0.3
	Infrastructure and means of transportation are getting better	0.1	3	0.3
	The presence of provisions for mining companies to empower local communities	0.12	3	0.36
	Sub-total	0.42		1.26
2	<i>Threat</i>			
1	Environmental carrying capacity decreases as a result of high mining activities around	0.14	-4	-0.56
2	Disease threat infecting the shrimp seeds	0.1	-3	-0.3
3	Procurement program of cultivation production facilities from government is very limited	0.1	-3	-0.3
4	Very low natural seeds	0.1	-2.5	-0.25
5	Increasing environmental pressure as a result of increased plantation activities and other economic activities	0.14	-4	-0.56
	Sub-total	0.58		-1.97
	Total	1.00		-0.71

Source: processed primary data.

Alternative strategy. IFAS and EFAS analyses were taken as basis to do SWOT analysis in order to know what position the pond culture business of Muara Kintap farmer's households was against the owned strength, weakness, opportunity, and threat. Based on the approach, various alternative strategies as SO, ST, WO, and WT were created as follows:

SO-strategy:

- to use the available pond area through implementation of various alternative cultivation of other commodities that need no large capital and have low risk in order to meet daily needs, such as the use of ponds with fish and shrimps trapped in tidal current. This activity could at least maintain some of the culture facilities, such as pond, water inlet, and dyke;

- to find collaboration with mining companies to develop alternative concept of pond culture, such as silvofishery system development or searching for alternative commodities in the pond area. Thus, the role of the regional government is highly needed, particularly in communicating with the mining companies.

WO-strategy:

- to guide the farmers on access development over all capital sources for their productive business and its alternatives;

- to provide working capital to run an alternative business during unfavorable environmental conditions for shrimp culture.

ST-strategy:

- to actively initiate activities to recover the environmental conditions through mangrove planting around the pond area and along the margin of Kintap river as buffer zone;

- to communicate collaboration program with mining companies on natural resources conservation commitment program and environmental quality rehabilitation acceleration program of coastal areas and Kintap river.

WT-strategy:

- to provide counseling in order to open the insight and build the awareness of the importance of good environmental conditions around the pond area, especially mangrove ecological roles and its minimum areal maintenance for the success of shrimp culture;

- to build the farmer's resources quality through training program on alternative culture skill (concept and commodity) or other skill to develop their creativity and self-support.

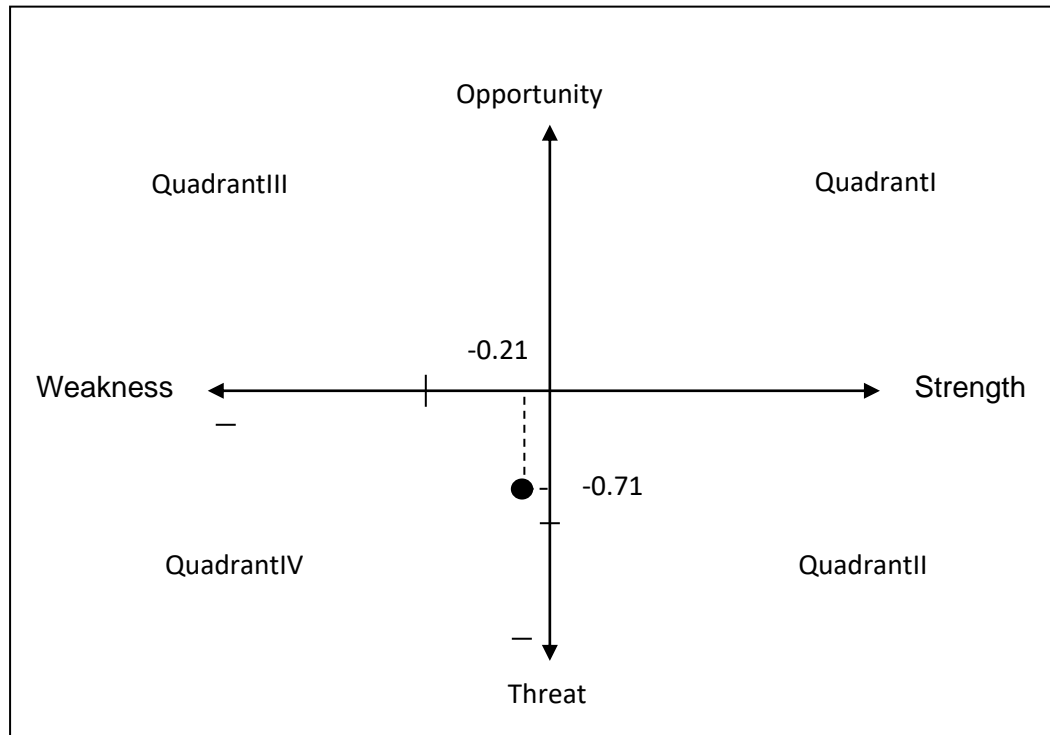
Analysis of pond culture management strategy. This strategy indicated that the grand strategy matrix of shrimp culture done by the farmers of Muara Kintap, Tanah Laut reGENCY occurred at quadrant IV (x,y), the weak position under very strong external environmental threat in which the internal strength was still not enough capable of controlling it or in defensive strategy (Fig. 1). This condition was based on SWOT analysis reflecting that the threat and weakness are more dominant than the current strength and opportunity. It shows the internal strategic factor with lower strength than weakness (-0.21) and the external strategic factor with higher threat than opportunity (-0.71).

The success of pond culture cannot be separated from the occurrence of mangrove forests around, while the culture pond area itself is the output of previous mangrove forest conversion. According to Gunarto (2004), pond development was intensively conducted in Indonesia (early 1990) through mangrove forest conversion effort. Increased pond area with reduced mangrove forest in the coastal area have triggered the environmental damages as pollution of aquaculture activities.

Besides pond area opening in the coastal area of Muara Kintap, Tanah Laut, and there were also various mining and plantation activities potentially contributing to the environmental quality degradations. High number of

external factors threatening the shrimp culture business in the area makes this activity very difficult to recovery without starting from environmental quality rehabilitation program, particularly mangrove forests around the ponds and Kintap river.

South Kalimantan that does not belong to one of the provinces recommended to do shrimp pond revitalization program by the Ministry of Marine Affair and Fisheries of Indonesia Republic is not certainly separated from the current coastal area condition evaluation. This fact is also, of course, implied in the availability of government's shrimp pond empowerment programs for South Kalimantan from the central government.



Analysis of Coastal Area and Small Islands Zonation Planning of Tanah Laut regency in 2014 indicated that Kintap district had 430.9 ha of mangrove forest with 1,883.6 ha of pond area under sufficiently suitable and suitable categories for aquaculture. Thus, if 1 ha of fish pond needs 2.8 ha of mangrove forest to degrade P waste in semi-intensive culture and 21.7 ha of mangrove area in intensive pond culture, Kintap district requires 4,843.2 ha for semi-intensive pond and 38,990.9 ha for intensive pond. Based on condition above, to implement shrimp culture activities, either traditional, semi-intensive, intensive or silvofishery system, mangrove forest rehabilitation or reforestation should be done.

Silvofishery can be taken as one of the alternatives potential to develop in this area through collaboration with mining companies under government's active roles, since this concept has an obligation to improve or replant the mangrove forest for the success of culture activities, and for this, nearby community's commitment and active role are highly needed. It is in agreement with Barbier (2006) and Thomason (2006) that local community's role and participation are highly needed to control the mangrove forest from destructions. The community-based management of the present mangrove forest and replanting will help reducing the worst impact on the coastal area. Institutional development supporting the community management could also help preventing destructions and conflicts from excessive use of the mangrove forests.

This silvofishery pond culture is very feasible to be considered as a problem solution for the farmer's households in Muara Kintap, because silvofishery is a sufficiently good technical approach pattern (Fitzgerald 2002), consisting in a series of integrated activities between fish culture activities and mangrove forest planting, rearing, and conservation efforts. This system has simple technology, can be done without damaging the present mangrove forest, and as an interval activity while attempting to reforest the green belt area in the critical coasts. Based on other studies, mangrove utilization for fish ponds should be done under silvofishery system that gives the highest feasibility level relative to other utilization, such as intensive shrimp pond, charcoal production, mangrove planting, and prioritized mangrove forests (Nuddin 2011).

Conclusions. Based on condition, problem and SWOT analysis, the development strategy and program of pond culture business in Muara Kintap village were as follows:

- the revitalization and conservation of protected area and mangrove and limitation of coastal area opening: this strategy could be done by (a) returning the role of Muara Kintap beach border and Kintap river border through revegetation/reforestation; (b) controlling the space opening in the coastal area and the upstream of Kintap river through permit restrictions and spatial plans regulations; and (c) control on post-mining phase implementation (reclamation and revegetation);
- stakeholder's role and concern development for coastal area and marine environmental preservation: this strategy could be done through the following program: (a) forming and functioning Co-Management by involving all stakeholders (government, community, company, and NGO); (b) making

simultaneous planning, implementation, and monitoring programs on environmental management; (c) developing monitoring functions of all related institutions through resources utilization in the coastal and marine area; (d) insight and knowledge development, skill increment, development of community's motivation and concern on environment;

- nearby community's productive economic activity development: this strategy could be done through: (a) alternative aquaculture development (system or commodity) to make use of the available area; (b) environmentally-friendly fish culture pilot program of the government or company through local community empowerment.

- community's participation development in aquatic environmental and mangrove management: this strategy could be done through the following program: (a) insight and knowledge development, skill improvement, and development of community's motivation and concern on the environment (counseling, training, poster, leaflet, baliho); (b) training on mangrove planting and mangrove nursery; (c) appreciation program for the community practicing mangrove culture and planting.

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