Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023

مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

Environmental Pollution in North African Countries: Case of Libya

[1]Dr. Mariam M. R. Alkawfi.

1.Assistant.Professor-Faculty.of.Economics,.University.of.Benghazi-mariam.alkwafi@uob.edu.ly.

DOI: https://doi.org/10.37376/deb.v42i1.6814 **Published: 27.07.2024**

Abstract

Climate change and environmental degradation, globally, have been the center of attention. Nevertheless, in some countries, environmental issues should receive greater attention, and governments should raise the level of environmental awareness and should set appropriate policies to reduce GHG emissions. Thus, it became crucial to focus on environmental degradation in these economies such as North African countries, more specifically here, Libya. This paper aims to evaluate the situation of environmental issues in Libya. Also, to review public policies towards clean energy, and inspect the emissions and carbon footprints in Libya. The study used the ARDL and ECM model to evaluate CO_2 emissions and to estimate the relationship between economic growth and CO_2 emissions during the period 1990–2021. Findings suggest that economic activities cause an increase in CO_2 emissions. Estimations show a positive relationship between GDP and emissions; however, electricity transmission loss is not significant. The study concluded that there is the absence of any actual significant policy to reduce emissions in Libya. Therefore, Libyan policymakers should make greater efforts towards clean energy usage and renewable energy sources.

Article Information

Keywords:.clean.energy,.pollution ,.environment,.ARDL, Libya.

Scan QR & Read Article Online.

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023

مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

التلوث البيئي في دول شمال إفريقيا: حالة ليبيا

[1] د.مريم محمد رمضان الكوافي.

1. أستاذ مساعد – قسم الأقتصاد- كلية الأقتصاد - جامعة بنغازي.

الملخص:

يحظى التغير المناخي والتدهور البيئي على الاهتمام الواسع على مستوى العالم، ومع ذلك، نجد في بعض البلدان، بأن القضايا البيئية لا تلقى اهتماما كبيرا، لذا يجب على الحكومات رفع مستوى الوعي البيئي ووضع السياسات المناسبة للحد من انبعاثات غازات الدفيئة. وقد أصبح من الضروري التركيز على التدهور البيئي في هذه الاقتصادات مثل دول شمال إفريقيا، وبشكل أكثر تحديدًا في ليبيا. تهدف هذه الورقة إلى تقييم وضع القضايا البيئية في ليبيا. وكذلك مراجعة السياسات العامة تجاه الطاقة النظيفة، وفحص الانبعاثات والبصمة الكربونية في ليبيا. استخدمت الدراسة الاسلوب الكمي، القياسي، باستخدام نموذج ARDL وECM لتقييم انبعاثات ثاني أكسيد الكربون والذي يمثل التلوث البيئي بالدراسة، وتقدير العلاقة بين النمو الاقتصادي وانبعاثات ثاني أكسيد الكربون خلال الفترة 1990-2021. تشير النتائج إلى أن الأنشطة الاقتصادية تسببت في زيادة انبعاثات ثاني أكسيد الكربون. حيث تظهر التقديرات وجود علاقة طردية بين الناتج المحلي الإجمالي والانبعاثات الكربونية؛ ومع ذلك، فإن الفاقد او التسربات اثناء نقل الكهرباء ليس ذو دلالة احصائية. وخلصت الدراسة غياب السياسات التي تعنى بالبيئة وعدم وجود سياسة فعلية جدية تعمل على خفض الانبعاثات الكربونية في ليبيا. ولذلك، ينبغي لواضعي السياسات الليبيين بذل جهود أكبر نحو استخدام الطاقة النظيفة ومصادر الطاقة المتجددة.

الكلمات المفتاحية: الطاقة النظيفة، التلوث، البيئة، نموذج تصحيح الخطأ، نموذج فترات التأخير الموزع، ليبيا

1..Introduction:

Libya.is.one.of.the.largest.countries.in.North.Africa,.and.an.important.member.of.the.OPEC.(Organization.of.Petroleum.Exporter.Countries)..Libya.depends.heavily.on.the.Oil.sector.as.the.main.source.of.the.country's.revenues..Therefore,.it.is.believed.that.the.main.source.of.GHG.(Green.House.Gases).emissions.in.Libya.is.contributed.to.the.energy.sector.(Climate.Change.Factsheet-report.2017)..This.makes.it.important.to.focus.on.reducing.emissions.as.a.step.towards.clean.energy.in.Libya..Libya.had.engaged.in.the.international.agreement.toward.reducing.pollution..In.1999,.Libya.signed.the.United.Nations.Framework.Convention.on.Climate.Change.(UNFCCC),.but.there.was.no.policy.framework.regarding.GHG.emissions.and.climate.change.at.the.national.level

2.Libyan.Environmental.Policy.Review:

At.level.of.legalization.and.policies,.Libya.is.still.far.from.achieving.any.prober.effort.using.low.carbon.emissions.energy.sources.so.far..One.of.the.main.causes.is.the.subsided.energy.prices.in.all.economic.sectors.in.Libya,.which.make.it.difficult.to.foster.any.renewable.energies..Moreover,.the.economy.mainly.depends.on.Oil.sector,.which.induces.more.pollution.in.the.area.

2.1..Current.Situation:

Libya.has.created.new.law.regarding.renewable.energy,.Law.No..426.establishing.the.Renewable.Energy.Authority.of.Libya.(REAOL).and.in.2013,.the.Libya.Renewable.Energy.Strate

gic.Plan.2013-2025.(IRENA,.2021)..

As.shown.in.Table.(1).and.(Figure.1&.2)..carbon.emissions.and.electricity.loss.do.not.seem.to.take.any.significant.down.turn.during.previous.couple.decades,.except.slight.reduction;.this.decrease.is.due.to.the.period.of.civil.war.2011.when.the.oil.production.had.been.stopped.several.times.because.of.security.instability.

The.problem.of.carbon.emissions.can.be.a.sign.of.the.absence.of.any.effort.towards.reducing.GHG's.emissions.

Table.(1)
Carbon.dioxide.emissions.(metric.tons.per.capita)

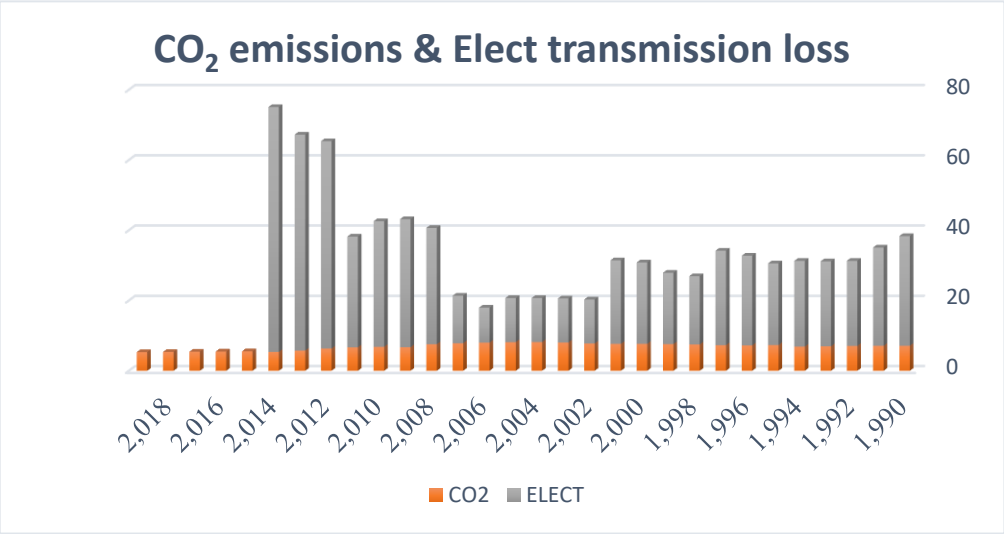
year	CO_2
1990	7.145018
1991	7.119107
1992	7.082582
1993	6.984291
1994	6.901241
1995	7.325624
1996	7.248469
1997	7.303872
1998	7.492434
1999	7.607836
2000	7.662168
2001	7.662605
2002	7.77213
2003	8.06446
2004	8.189257
2005	8.173783
2006	8.025766
2007	7.860768
2008	7.564248
2009	6.71897
2010	6.836836
2011	6.680594
2012	6.327709
2013	5.751906
2014	5.387475
2015	5.563259
2016	5.498165

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

2017	5.437858
2018	5.376871
2019	5.311315

Source:.World.Bank

Figure.(1)



E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلد 42
العدد الأول لسنة 2023

Figure.(2) CO2.emissions.(metric.tons.per.capita)

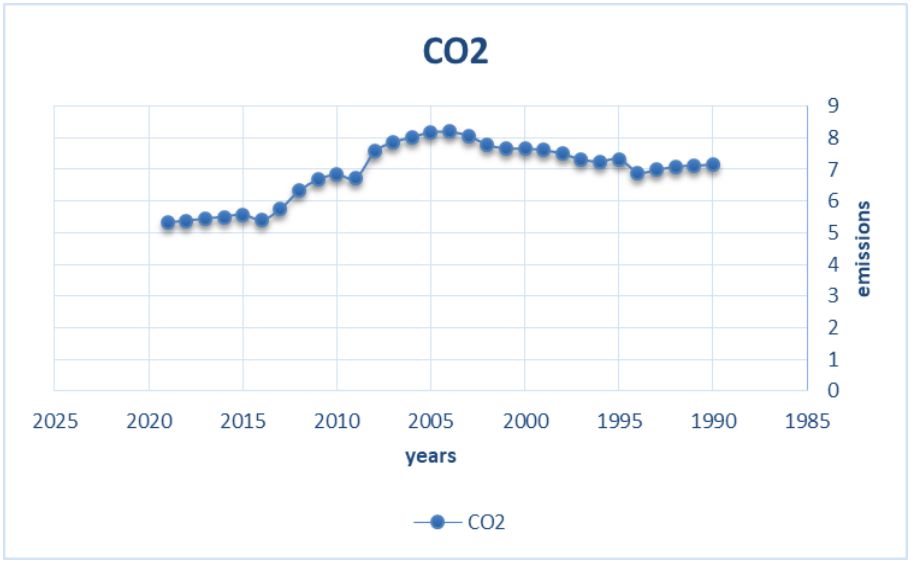
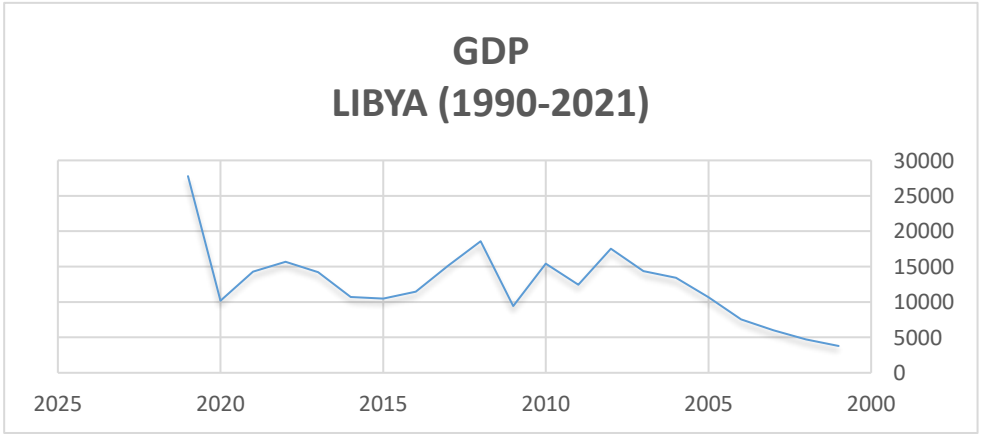


Figure.(3)



E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

2.2..Prospective.Situation:.

Libya.would.have.a.great.potential.for.solar.energy.if,.and.only.if.government.paid.enough.attention.to.the.renewable.energy.resources.in.Libya.and.do.considerable.effort.towards.clean.energy.pathway..It's.stated.that.average.sun.duration.is.more.than.3,500.hours.per.year,.which.is.equivalent.to.a.layer.of.25.cm.of.crude.oil.per.year.on.the.land.surface.(Salem..A..Al-Hashmi..et.al.2017).

Some.empirical.studies.proved.that.adopting.renewable.sources.for.lighting.system.could.help.mitigate.Co_2.emissions..Such.as.the.study.concluded.that.PV.power.plant.can.be.feasible.and.sustainable.from.economic.perspective.scale.(A..Albarghathi.et.al.2018).

Photovoltaic.powered.street.lighting.system.as.the.most.energy.saving.and.reduce.air.pollution.in.Libya.(A..Elmanfi.et.al.2019).

Hence,.policymakers.are.recommended.to.take.more.serious.and.courage.steps.towards.environmental.friendly.comprehensive.policies.to.utilize.to.natural.resources.in.this.gifted.country.and.achieve.low.emissions.levels.at.the.same.time..

3..Aim.and.the.Importance.of.the.Study:

This.study.aims.to.highlight.the.importance.of.reducing.emissions.and.reviewing.the.related.policies.regarding.environmental.degradation..Therefore,.the.paper.discusses.the.main.environment.pollution.issues.in.Libya,.and.empirically.examines.CO_2.emissions.and.the.main.factors.af

fecting.environment.in.Libya..Thus,.the.scope.of.the.study.is.important.for.two.reasons:.First,.due.to.the.considerable.increased.global.attention.regarding.reducing.emissions.towards.clean.energy.worldwide..Second,.because.of.the.lack.of.concern.at.public.policy.level,.this.study.is.important.to.shed.the.light.and.drag.the.attention.to.environment.pollution.for.both.private.and.public.levels.

4..Data.and.Study.Period:

The.paper.collect.the.data.that.represent.economic.growth.and.environmental.pollution.for.the.purpose.of.the.study.mainly.from.World.Bank.and.International.Statics..This.study.covers.the.period.from.1990.to.2021).

5..Methodology:

In.this.paper,.we.used.ARDL.model.to.examine.the.relationship.between.growth.and.GHG.emissions..We.used.CO_2.(as.the.main.pollutant.cause),.similar.to.several.studies.used.the.same.pollutant.factor.to.do.similar.work.regarding.environment.degradation..Such.as.work.of.(M..Kazemi.and.I.Ebrahimi..2008),.(R..Alam.&.M..Adil..2019).and.(Saleheen.Khan.et.al.2020),.while.some.other.studies,.used.nitrous.oxide.(No2).emissions.to.represent.the.element.of.pollution.in.Germany.(M..Monserrate.&.Fernandez.2017).

Generally,.almost.of.electricity.is.generated.at.main.power.stations.and.sent.through.high-voltage.transmission.lines.over.long.distance.before.distributed.and.connect.to.the.final.users,.during.this.process.part.the.electricity.with.the.fuel.used.will.be.lost..Therefore,.loss.of.transmission.

of.electricity.is.considered.as.one.of.the.main.causes.of.emissions.(S..Jordaan.&.K..Surana..IEA..2019)..Accordingly,.our.model.used.electricity.transmission.loss.as.additional.element.in.the.pollution..

The.economic.growth.is.the.dependent.variable.in.our.model,.so,.(GDP).is.included.to.represent.economic.growth..Hence,.the.relationship.tested.in.our.model.is.as.follows:

CO_2=f(GDP,.GDP2,.ELECT),.the.adopted.model.is:

$LCO_{2t}.=.\alpha_0.+.\beta_1 LGDP_t.+.\beta_2.Elect_t.+.u_t$

Where:.

CO_2.=.Carbon.dioxide.emissions.(metric.tons.per.capita)

GDP.=.Gross.domestic.Product.(GDP.Per.capita.GDP.(current.LCU)

ELC.=.Electric.power.transmission.and.distribution.losses.(%.of.output)[1]

6..The.Empirical.Findings:

The.study.results.show.that.the.environmental.Kuznets.inverted.curve.(EKC).does.not.exist..Although.the.regressors'.coefficients.are.statically,.significant.at.(P-value.of.5%),.the.electricity.consumption.still.does.not.have.a.significant.role.as.expected.to.increase.level.of.the.pollution..This.can.be.due.to.the.fact.that,.it.is.not.the.best.to.describe.the.impact.of.Libyan.people.usage.of.electricity,.due.to.the.unviability.of.da

[1] Electric power transmission and distribution losses include losses in transmission between sources of supply and points of distribution and.in.the.distribution.to.consumers, including pilferage (WB, world bank).

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

ta.about.usage.of.diesel.during.blackout.periods..However,.findings.confirm.the.positive.relationship.between.economic.activity.and.CO_2.emissions.

6.1.Test.of.Stationarity:

To.test.f.our.model.variables.we.did.unit.root.Augmented.Dickey-Fuller.(ADF)-test,.using.(P-value.compared.with.0.05).to.test.the.stationarity.hypothesis:

H_0:.the.variable.has.a.unit.root...

.H_1:.the.variable.does.not.have.a.unit.root

.As.shown.in.the.tables.below,.according.to.According.to.the.P-value.of.ADF.statistic,.we.can.reject.the.null.hypothesis,.and.our.explanatory.variable.are.stationary.at.first.differences,.Results.are.shown.in.the.following.tables:

Table.1 Unit.root.test.for.(CO2)

	Null.Hypothesis:.D(CO2).has.a.unit.root			
Lag.Length:.0.(Automatic.-.based.on.SIC,.maxlag=6)				
..Prob.*	t-Statistic			
.0.0112	-3.649847	Augmented.Dickey-Fuller.test.statistic		
	-3.699871		1%.level	Test.critical.values:
	-2.976263		5%.level	
	-2.627420		10%.level	

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

Table.2 Unit.root.test.for.(ELECT)

Null.Hypothesis:.D(ELECT,2).has.a.unit.root		
Exogenous:.None		
Lag.Length:.2.(Automatic.-.based.on.SIC,.maxlag=5)		
..Prob.*	t-Statistic	
.0.0000	-8.484236	Augmented.Dickey-Fuller.test.statistic
	-2.685718	1%.level Test.critical.values:
	-1.959071	5%.level
	-1.607456	10%.level

*MacKinnon.(1996).one-sided.p-values.

Table.(3) Unit.root.test.for.(GDP)

Null.Hypothesis:.D(GDP).has.a.unit.root		
Lag.Length:.0.(Automatic.-.based.on.SIC,.maxlag=6)		
Prob.*	t-Statistic	
0.0000	-7.961392	Augmented.Dickey-Fuller.test.statistic
	-3.699871	1%.level Test.critical.values:
	-2.976263	5%.level
	-2.627420	10%.level

*MacKinnon.(1996).one-sided.p-values.

E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

Table.(6).6.2.ARDL-Estimation.results

Dependent.Variable:.LC02				
Method:.ARDL				
Model.selection.method:.Akaike.info.criterion.(AIC)				
Dynamic.regressors.(4.lags,.automatic):.LGDP.ELECT				
Fixed.regressors:.C				
Number.of.models.evalulated:.100				
Selected.Model:.ARDL(1,.1,.0)				
Prob.*..		Std..Error	Coefficient	Variable
0.0007	4.064579	0.120828	0.491116	LC02(-1)
0.0026	3.469039	0.019615	0.068046	LGDP
0.0012	-3.815902	0.018252	-0.069649	LGDP(-1)
0.0000	-5.457253	0.000681	-0.003714	ELECT
0.0001	4.944978	0.224523	1.110260	C
1.974451	....Mean.dependent.var		0.971755	R-squared
0.105006	....S.D..dependent.var		0.965808	Adjusted.R-squared
-4.862311	....Akaike.info.criterion		0.019417	S.E..of.regression
-4.616884	....Schwarz.criterion		0.007163	Sum.squared.resid
-4.797199	....Hannan-Quinn.criter.		63.34774	Log.likelihood
2.158506	....Durbin-Watson.stat		163.4193	F-statistic

E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

The.error.correction.coefficient.is,.statically,.significant.at.level.of.(5%),. and.with.negative.sign

ARDL.Error.Correction.Regression

Dependent.Variable:.D(LC02)

Selected.Model:.ARDL(1,.1,.0)

Case.2:.Restricted.Constant.and.No.Trend

Sample:.1990.2018

Included.observations:.24

ECM.Regression

Case.2:.Restricted.Constant.and.No.Trend

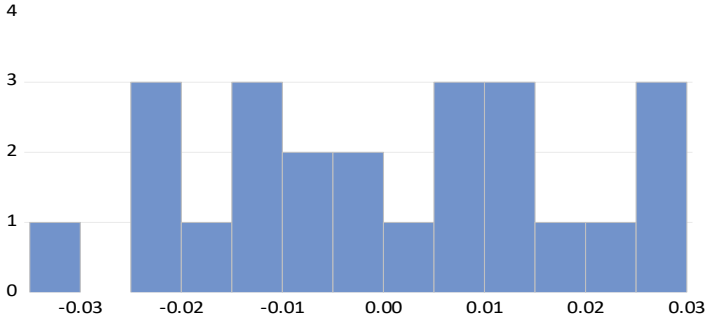
Prob....	t-Statistic	Std..Error	Coefficient	Variable
0.0002	4.542910	0.014978	0.068046	D(LGDP)
0.0000	-9.683880	0.052550	-0.508884	CointEq(-1)*
-0.011764	....Mean.dependent.var		0.806299	R-squared
0.040098	....S.D..dependent.var		0.797494	Adjusted.R-squared
-5.112311	....Akaike.info.criterion		0.018044	S.E..of.regression
-5.014140	....Schwarz.criterion		0.007163	Sum.squared.resid
-5.086267	....Hannan-Quinn.criter.		63.34774	Log.likelihood
			2.158506	Durbin-Watson.stat

6.3..Diagnostic.tests:

1.Normality.test:According.to.the.P-value.of.Jarque-Bera.(0.55),.we.cannot.reject.the.null.hypothesis,.that.the.random.error.has.a.normal.distribution.. (Table.7)

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلد 42
العدد الأول لسنة 2023

Table.(7) Normality.test



Series: Residuals	
Sample 1991 2014	
Observations 24	
Mean	1.48e-16
Median	-0.000749
Maximum	0.027582
Minimum	-0.033443
Std. Dev.	0.017648
Skewness	-0.103339
Kurtosis	1.929809
Jarque-Bera	1.188025
Probability	0.552107

2.Test.of.heterogeneity: To.check.that.our.model.is.free.of.heterogeneity.we.used.Breusch-Pagan Godfrey.test,.as.seen.in.Table.(8).the.p-value.is.greater.than.0.05,.therefore,.H_0.cannot.be.rejected,.and.heterogeneity.does.not.exist.in.our.model..

Table.(8) Heterogeneity.test

Heteroskedasticity.Test:.Breusch-Pagan-Godfrey			
Null.hypothesis:.Homoskedasticity			
0.6493	....Prob..F(4,19)	0.626614	F-statistic
0.5923	....Prob..Chi-Square(4)	2.797066	Obs*R-squared
0.9364	....Prob..Chi-Square(4)	0.814988	Scaled.explained.SS

3.Test.of.serial.correlation A.test.for.autocorrelation.has.been.done,.and.results.as.shown...in.Table.(9&10).at.there.is.no.serForm.the.results.in.table.(8),.with.the.value.of.Prob..Chi-Square.we.can.conclude.that.the.model.is.free.of.heterogeneity.

E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلـــد 42
العدد الأول لسنة 2023

statistic.respectively.are.greater.than.5%).

ial.correlation,.because.of.the.value.of.(Prob..Chi-Square..is.and.Q-

Table.(9)

Breusch-Godfrey.Serial.Correlation.LM.Test:			
Null.hypothesis:.No.serial.correlation.at.up.to.2.lags			
0.9031	....Prob..F(2,17)	0.102480	F-statistic
0.8668	....Prob..Chi-Square(2)	0.285907	Obs*R-squared

Table.(10)

Sample.(adjusted):.1991.2014

Included.observations:.24.after.adjustments

.Prob*	.Q-Stat	.PAC	AC.		Partial.Correlation	Autocorrelation
0.159	1.9801	0.270	0.270	1	.....|**....|	.....|**....|
0.283	2.5255	-0.228	-0.139	2	.....**|.....|	.....*|.....|
0.317	3.5305	-0.087	-0.184	3	.....*|.....|	.....*|.....|
0.151	6.7343	-0.307	-0.320	4	.....**|.....|	.....**|.....|
0.200	7.2827	-0.002	-0.129	5	.....|.....|	.....*|.....|
0.273	7.5553	0.002	0.089	6	.....|.....|	.....|*.....|
0.274	8.7094	0.081	0.177	7	.....|*.....|	.....|*.....|
0.237	10.421	0.085	0.210	8	.....|*.....|	.....|*.....|
0.279	10.956	-0.224	-0.113	9	.....**|.....|	.....*|.....|
0.219	13.087	-0.050	-0.219	10	.....|.....|	.....**|.....|
0.280	13.203	0.057	-0.049	11	.....|.....|	.....|.....|

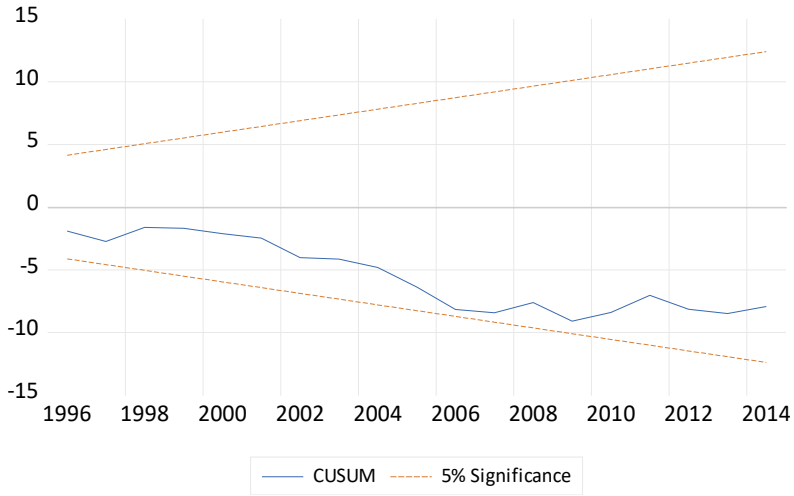
0.344	13.355	-0.048	-0.054	12	.....|.....|	.....|.....|

*Probabilities.may.not.be.valid.for.this.equation.specification.

4.Test.of.model.stability:

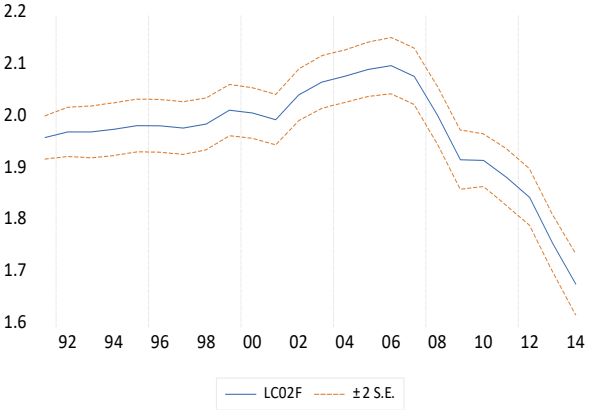
The.cumulative.Sum.Chart.(CU SUM).reveals.that.the.model.is.s table.

Table.(11) Stability.test



Dirasat in Economics and Business Journal
Faculty of Economics - University of Benghazi
Volume 42 ISSUE 1
Year 2023
مجلة دراسات في الأقتصاد والتجارة
كلية الأقتصاد - جامعة بنغازي
المجلد 42
العدد الأول لسنة 2023

5..Test.for.Forecasting:.measurements.of.forecast.quality



Forecast: LC02F	
Actual: LC02	
Forecast sample: 1990 2018	
Adjusted sample: 1991 2014	
Included observations: 24	
Root Mean Squared Error	0.019136
Mean Absolute Error	0.015019
Mean Abs. Percent Error	0.755418
Theil Inequality Coef.	0.004839
Bias Proportion	0.000025
Variance Proportion	0.037587
Covariance Proportion	0.962387
Theil U2 Coefficient	0.451285
Symmetric MAPE	0.754537

7..Conclusions.and.Recommendations:

This.study.examined.the.environmental.issues.in.Libya..The.paper.tested.the.relationship.between.CO_2.emissions.and.the.main.factors.affecting.the.environment..Our.results.suggest.a.positive.relationship.between.income.and.pollution,.in.other.words,.economic.activity.leads.to.more.pollution.in.Libya..However,.the Results.satisfy.the.diagnostic.tests.and.show.forecasting.accuracy.coefficients.(Theil.U2,.RMSE.&.MAE).are.within.the.accepted.range.

Hence,.and.according.to.the.results.of.the.previous.tests,.we.can.conclude.that.the.model.is.fit.and.free.of.econometric.problems:.autocorrelation,.heterogeneity,.and.has.normal.distribution.

E-ISSN 2663 - 7855
ISSN- L 2663 - 7847
Legal Deposit Number 238/2017
DOI https://doi.org/10.37376/deb.v42i1
Frequency: One Volumes per year
Publication Fees are Free
Publisher: University of Benghazi, Benghazi, Libya
Editor-in-Chief Prof. Akram. Zoubi
https://journals.uob.edu.ly/DEB
drasat.journal@uob.edu.ly
+218913260452

he.Libyan.government.to.make.more.effort.at.financing.renewable.projects.in.the.future.and.take.serious.steps.towards.low.carbon.emissions,.especially,.since.Libya.has.the.potential.to.use.friendly.energy.resources..However,.there.is.a.serious.need.for.further.empirical.studies.regarding.clean.energy.and.renewable.energy.resources.in.Libya..

References:

A..Albarghathi,.R...Zakaria,.A..Tahir,.A..khalil,.A..Alfergani.and.F..Mohamed..(2018)..Economic.Feasibility,.Design,.and.Simulation.of.Centralized.PV.Power.Plant..The.9th.International.Renewable.Energy.Congress.(IREC.2018).

A.Wajahat,.A..Azrai.and.A..Azam..Re-visiting.the.environmental.Kuznets.curve.hypothesis.for.Malaysi

.findings.show.that.the.EKC.relationship.does.not.exist;.which.it.can.be.due.to.the.slow.growth.in.the.Libyan.economy..Therefore,.Libya.still.far.from.the.turning.point.in.the.EKC.theory..Moreover,.results.indicate.that.the.electricity.has.an.unexpected.insignificant.impact.on.the.pollution..A.justification.can.be.given.here.is.that.the.Libyans.depend.more.on.power.generators.using.other.fossil.fuel.which.could.have.more.profound.impact.on.environment..Therefore,.we.recommend.it.for.further.study..

One.of.the.main.recommendations.of.this.study.is.the.necessity.for.the.government.to.make.significant.efforts.towards.achieving.clean.energy.and.lowering.carbon.emissions,.i.e.;.generating.power.by.friendly.energy.sources..In.addition,.we.encourage.t

.Kuznets.Curve.in.Middle.East..Volume.10,.Issue.34.-.Serial.Number.34..April.2008.Pp.57-71..Avaliable.online:.https://ijer.atu.ac.ir/issue_764_765.html?lang=en

M..Monserrate.&.M..Fernandez.(2017)..An.Environmental.Kuznets.Curve.for.N2O.emissions.in.Germany.an.ARDL.approach..Natural.Resources.Forum.-.Wiley.Online.Library.2017..Available.online:.https://doi.org/10.1111/1477-8947.12122,.https://onlinelibrary.wiley.com/

R..Alam.&.M..Adil..2019.Validating.the.environmental.Kuznets.curve.in.India_.ARDL.bounds.testing.framework..OPEC.Energy.Review.-.Wiley.Online.Library..Sep..2019,.Vol.43..issue.3.Pp.277-

a:.Fresh.evidence.from.ARDL.bounds.testing.approach..Volume.77,.September.2017,.Pages.99-1000..Available.online:.https://www.sciencedirect.com/journal/renewable-and-sustainable-energy-reviews

Elmanfi,.E..Elshrif,.Z..Ragab,.A..khalil.and.F..Mohamed.(2019)..Sustainable.Street.Lighting.System.Design.in.Libya..The.10th.International.Renewable.Energy.Congress.(IREC.2019).

Greenhouse.Gas.Emissions.Factsheet:.Libya.report.(2017)..Available.online:.http:www.cliamtelinks.org/

http://data.worldbank.org/indicator

International.Renewable.Energy.Agency.(IRENA).(2021)..http://www.irena.org/

M..Kazemi.and.I.Ebrahimi..2008..Examining.Enviromental

Saleheen.Khan,.Muhammad.Shahbaz.and.Farooq.Ahmed.Jamthe.Estimation.Of.The.Environmental.Kuznets.Curve.In.Kazakhstan..The.Journal.of.Energy.and.Development.Vol..45,.No..1/2.(Autumn.2019.and.Spring.2020)..Pp..93-112.

Yale.Center.for.Environmental.Justice,.Fact.Sheets.(Libya)..USAID.Publications.visited.on:.04/27/2022.

300..Available.online.:.https://doi.org/10.1111/opec.12156

S..Jordaan.and.K..Surana..IEA.report.2019..Availiable.online:.http://theconversation.com

S.A.Al-Hashmi.,.M..Sharif.1.,M..Elhaj.2.and.M..Almrabet.(2017)..The.Future.of.Renewable.Energy.in.Libya..University.Bulletin.–.ISSUE.No.19-.Vol..(3).–.July.–.2017..Pp109-122.