



The Yasuni-ITT Initiative in Ecuador

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Introduction

Ecuador indicated¹ that the President of Ecuador, Rafael Correa announced in 2007, at The General Assembly of the United Nations, the country's commitment to maintain indefinitely unexploited reserves of 846 million barrels of oil in the ITT (Ishpingo-Tambococha-Tiputini), equivalent to the 20% of the country's reserves, located in Yasuní National Park inside Ecuadorian Amazon. The president Correa proposed the international community contributes financially with at least 3.6 billion U.S., a sum that represents half of the revenue lost to the Ecuadorian state, and said: "This would be an extraordinary example of global collective action, that would allow not only reduce global warming, which benefits the whole planet, but also introduce a new economic logic for the 21st century, which assigns a value to things other than merchandise."

UNDP² stated that the Yasuní ITT Trust Fund, established by the Government of Ecuador and the United Nations Development Programme (UNDP) on 3 August 2010, exists to receive and manage contributions in support of Ecuador's historic decision to forego extracting the 846 million barrels of oil in Yasuní National Park's Ishpingo Tambococha Tiputini (ITT) oil fields. The oil is located underneath one of the most biodiverse regions of the world (a UNESCO World Biosphere Reserve), and Ecuador is sacrificing the potential oil revenues (currently estimated at more than USD \$10 billion) for the sake of global ecological conservation, protection of biodiversity and respect of the rights and cultures of indigenous people. To offset a portion of the loss, and to create a spirit of global co-responsibility in addressing environmental challenges, Ecuador is asking for support from the international community.

Rationale for the initiative

Ecuador indicated that the Yasuní-ITT initiative is part of Ecuador's commitment to maintain reserves indefinitely untapped oil underground in Yasuní National Park, the most biodiversity place on the planet. This initiative is born by the need to conserve biodiversity and a minimum of respect for the indigenous community living in voluntary isolation.

UNDP stated that Ecuador is one of Conservation International's 17 "megadiverse" countries, and Yasuní National Park is one of the most biodiverse places on earth. In it, South America's amphibian, bird, mammal, and vascular plant diversity all reach their highest levels. A single hectare in Yasuní contains more species of tree than can be found in all of the United States and Canada. The park is also home to two indigenous tribes living in voluntary seclusion, the Tagaeri and Taromenane. In addition to the dangers facing the natural ecosystem, drilling for oil in Yasuní would significantly worsen the effects of climate change. Drilling would result in the release of 407 million metric tons of carbon dioxide emissions into the atmosphere, equivalent to the annual emissions of countries such as France and

¹ <http://yasuni-itt.gob.ec/>

² UNDP. YASUNÍ ITT FAQs

Brazil, and the resulting deforestation would release another 800 million metric tons. A drilling ban will preserve biological diversity, protect the indigenous peoples, and prevent the exacerbation of climate change. There is no question that this vital ecological habitat must be preserved.

Ecuador stated that the mission is to protect an important part of the planet that brings balance to the ecosystem and is home for thousands of unique species in the world. With accurate knowledge and based on environmental awareness, the aim is to raise the necessary amount of funds for the plan B about the exploitation of oil. Its goal is to raise 3.6 billion dollars, which is the equivalent amount to the 50% of the resources that would result from oil extraction. Besides the conservation of this block, it's avoiding deforestation and protecting the ecosystem that lives here.

Ecuador stated that it has a clear vision on the consequences of global warming. Little by little the excessive use of land resources has made changes are noticeable at an international level, with a strong impact on the people's life. By having a clear vision on the world scene, it can fight for a common goal that will not only help its country, but will be the basis for the protection of forests and natural systems in the world. This is an international replicable cause that will give a breath to the world and also an opportunity to get a better life quality to new generations.

Valuation

An economic valuation study was conducted on the Yasuni National Park³. Using the benefit transfer approach, it was estimated that the value of the flow of non-market ecosystem services in Yasuni National Park is between \$2 and \$5.4 billion per year. The ITT oil block is roughly 15% of Yasuni National Park which makes the value of the oil block in terms of ecosystem services \$300,000 to \$810 million US dollars. This means that after 5 to 7 years, the value of Yasuni would surpass the benefits of the oil exploitation, which is valued between \$14 and \$28 billion dollars. The study concluded that the total present value of ecosystem services is estimated to be \$1.7-4.4 trillion, which is likely a significant underestimate of the total economic value of natural capital assets in the form of healthy resilient ecosystems. Oil extraction in the area would provide short-term gains at the expense of significant loss in ecosystem service value over time. It justified Ecuador for asking the international community for compensation for protecting and not drilling the ITT block.

Table 1. Ecosystem Services Valuation of Yasuni National Park

Landcover Class: Lowland Tropical Forest

Ecosystem Service	Ecosystem Service(s)	Methodology	Value Low	Value High
Climate Regulation	Pearce and Moran (1994)		\$199	\$482
Disturbance Regulation	Ruitenbeek 1989	TEV	\$7	\$7
Water Regulation	Fernside 1997		\$24	\$24
Water Supply	Kumari 1995	Market Price	\$11	\$11

³ Batker, David, Maya Kocian and Isabel de la Torre (2007). Yasuni National Park: a Rapid Ecosystem Service Valuation, 2007, Earth Economics,

http://www.eartheconomics.org/FileLibrary/file/Reports/Latin%20America/Earth%20Economics_Yasuni_rESV_2007.pdf.

Erosion control	Chopra 1993	Cost of Restoration	\$81	\$912
Soil Formation	Pimentel et al. 1996		\$0	\$14
Nutrient Cycling	Chopra 1993	Experimental Data	\$1,299	\$1,299
Waste Treatment	Pimentel et al. 1996		\$123	\$123
Food	Godoy et. al. (1993)	Net income	\$48	\$106
Raw Materials	Godoy et. al. (1993)	CVM	\$136	\$1,429
Genetic Resources	Godoy et. al. (1993)	Market Value	\$46	\$158
Medicinal Resources	Grimes et al. (1994)	Est. per-hectare \$ flow from 3 tree Medicinal tree barks in Ecuador	\$11	\$11
Recreation	Kramer et. al. (1992)	CVM	\$71	\$933
Totals			\$2,056	\$5,509

Landcover Class: Lowland Tropical Forest of Palms and Blackwater

Ecosystem Service	Ecosystem Service	Methodology	Value Low	Value High
Climate Regulation	Pearce and Moran (1994)		\$199	\$482
Disturbance Regulation	Ruitenbeek 1989	TEV	\$7	\$7
Water Regulation	Fernside 1997		\$24	\$24
Water Supply	Kumari 1995	Market Price	\$11	\$11
Erosion control	Chopra 1993	Cost of Restoration	\$81	\$912
Soil Formation	Pimentel et al. 1996		\$0	\$14
Nutrient Cycling	Chopra 1993	Experimental Data	\$1,299	\$1,299
Waste Treatment	Pimentel et al. 1996		\$123	\$123
Food	Anderson et al. (1991)	Value of Babassu palm in Amazon	\$83	\$106
Raw Materials	Godoy et. al. (1993)	CVM	\$136	\$1,429
Genetic Resources	Godoy et. al. (1993)	Market Value	\$46	\$158
Medicinal Resources	Grimes et al. (1994)	Est. per-hectare \$ flow from 3 tree Medicinal tree barks in Ecuador	\$11	\$11
Recreation	Kramer et. al. (1992)	CVM	\$71	\$933
Totals			\$2,091	\$5,509

Landcover Class: Forest Inundable of Low Lands by White Water

Ecosystem Service	Author(s)	Methodology	Value Low	Value High
Climate Regulation	Pearce and Moran (1994)		\$0	\$482
Disturbance Regulation	Rien (2005)		\$7	\$115
Water Regulation	Fernside 1997		\$24	\$183
Water Supply	Kumari 1995	Market Price	\$11	\$11
Erosion control	Chopra 1993	Cost of Restoration	\$81	\$912
Soil Formation	Pimentel et al. 1996		\$0	\$14
Nutrient Cycling	Chopra 1993	Experimental Data	\$1,299	\$1,299
Waste Treatment	Pimentel et al. 1996		\$123	\$123
Food	Godoy et. al. (1993)	Net income	\$48	\$106
Raw Materials	Godoy et. al. (1993)	CVM	\$136	\$1,429
Genetic Resources	Godoy et. al. (1993)	Market Value	\$46	\$158
Medicinal Resources	Grimes et al. (1994)	Est. per-hectare \$ flow from 3 tree Medicinal tree barks in Ecuador	\$11	\$11
Recreation	Kramer et. al. (1992)	CVM	\$71	\$933
Totals			\$2,056	\$5,509

Estimates of Ecosystem Value Flows for Yasuní National Park

Cover Type	Acres	Total \$/ac/yr by Cover Type:		Total \$/year by Cover Type:	
		Low	High	Low	High
Evergreen forest of Low Lands of the Amazonia	791,182.14	\$2,056.00	\$5,509.00	\$1,626,670,476.01	\$4,358,622,399.00
Forest of Low Lands of Palms and Black Water	173,515.27	\$2,091.00	\$5,509.00	\$362,820,436.82	\$955,895,641.52
Forest of Low Lands inundated by White Water	25,633.88	\$1,857.00	\$5,776.00	\$47,602,118.51	\$148,061,301.31
Other: Natural forest, Pastures, Cultivated, Eroded.	26,041.72	\$0.00	\$0.00	\$0.00	\$0.00

Present Value of Ecosystem Services of Yasuní National Park

Discount Rate	Low Estimate	High Estimate
0% (100 years)	\$1.5 trillion	\$3.7 trillion
3% (100 years)	\$65 billion	\$188 billion

Present Value of Ecosystem Services of ITT

Discount Rate	Low Estimate	High Estimate
0% (100 years)	\$204 billion	\$750 billion
3% (100 years)	\$14 billion	\$38 billion

Support and donors to the Initiative

UNDP indicated that in addition to being supported by the United Nations Secretary-General and being administered by the United Nations Development Programme, Yasuní is supported by leading environmentalists, scientists, Nobel Laureates, world leaders, and celebrities from around the world. The initiative has received the official support of the German Parliament, with unanimous support from all the political parties, as well as the European Union, and other international organizations such as Inter - American development Bank (IDB), Andean Development Corporation (CAF), the Organization of Petroleum Exporting Countries(OPEC), South American Union of Nations(UNSA), Andean Community of Nations(CAN), Organization of American States(OAS), International Union for Conservation of Nature and Natural Resources(IUCN), and various indigenous organizations and ecological groups in Ecuador.

Table 2. Contributions to Ecuador Yasuni Capital Window 2010 – 2024, as of 16 August 2013

Contributor/Partner	Commitments	Deposits	Deposit rate
Regional Govt. of Wallonia	1,903,694.82	1,220,465.00	64.1%
Chile, Government of	100,000.00	100,000.00	100.0%
Colombia, Government of	100,000.00	100,000.00	100.0%
Ecuador, Government of	250,000.26	250,000.26	100.0%
Region Ile-de-France	130,378.10	0.00	0.0%
Region Rhone-Alpes	195,314.37	195,314.37	100.0%
Georgia, Republic of, Government of	100,000.00	100,000.00	100.0%
Indonesia, Government of	1,000,000.00	0.00	0.0%
Italy, Government of	44,055,571.75	3,932,147.10	8.9%
Luxembourg, Government of	1,332,700.00	1,332,700.00	100.0%
Spain, Government of	1,400,400.00	1,400,400.00	100.0%
Turkey, Government of	100,000.00	100,000.00	100.0%
Government: total	50,668,059.3	8,731,026.73	
Avina Foundation	100,000.00	100,000.00	100.0%
Coca Cola Company	100,000.00	0.00	0.0%
Constructora N Odebrecht	129,975.00	129,975.00	100.0%
Earth Day Network	160,184.27	160,184.27	100.0%
Everfresh	50,000.00	50,000.00	100.0%
Hector Delgado	50,000.00	50,000.00	100.0%
Herdoiza Crespo Constr. (ECU)	200,000.00	200,000.00	100.0%

Meurthe-et-Moselle (France)	53,762.56	53,762.56	100.0%
Private Sector	365,711.79	365,711.79	100.0%
Ryohin Keikaku Co. Ltd (Japan)	200,140.15	200,140.15	100.0%
SK Engineering & Construction	50,000.00	50,000.00	100.0%
World of Kindness (Russia)	100,019.00	100,019.00	100.0%
Others: total	1,559,792.77	1,459,792.77	
Total	52,227,852.07	10,190,819.50	

Yasuni ITT Trust Fund

The Yasuni Ishpingo Tambococha Tiputini Trust Fund (Yasuni ITT Trust Fund) is established for receipt of contributions from supporters of Ecuador’s historical decision to permanently forego the extraction of the Yasuni ITT oil fields (about 846 million barrels). The contributions will finance renewable energy and sustainable development investments such as avoidance of deforestation and conservation of ecosystems. In the spirit of co-responsibility, Ecuador is requesting the world community to contribute 50 percent of the income it is forgoing, amounting to US\$ 3.6 billion (over a 13 year period), with the balance being the contribution of the people of Ecuador to global goods⁴.

The Yasuni ITT Trust Fund, which has a Capital Fund Window and a Revenue Fund Window, will be administered by the Multi - Partner Trust Fund Office (MPTF Office) of the United Nations Development Programme (UNDP). It will be governed and overseen by an eight - person Steering Committee. The Steering Committee members will include three representatives of the Government, two representatives of contributing countries and one Ecuadorian civil society representative and two members of UNDP.

Yasuni Capital Window: Purpose, Principles and Structure

The Capital Fund Window of the Yasuni ITT Fund will finance the following strategic renewable energy projects, aimed at changing Ecuador’s energy matrix from fossil fuel dependence to renewable energy sources and increasing national energy efficiency and energy savings:

- Hydro energy projects
- Geothermal energy projects
- Solar energy projects
- Wind energy projects
- Biomass energy projects

⁴ UNDP (2010). Ecuador Yasuni ITT Trust Fund: Terms of Reference, 28 July 2010, and Memorandum of Agreement between the Government of Ecuador and the United Nations Development Programme for Management and Other Support Services Related to the Ecuador Yasuni ITT Trust Fund

- Tidal energy projects

The Recipient Organizations will provide mandatory annual revenue payments for the use of the Capital Fund Window funds. The terms of repayments will be approved by the Steering Committee.

Yasuni Revenue Fund Window: Purpose, Principles and Structure

The Revenue Fund Window of the Yasuni ITT Trust Fund will finance the following strategic sustainable development programmes, within the guidelines of the Ecuadorian National Development Plan:

- a) Effectively prevent deforestation and conserve ecosystems and allow the Tagaeri and Taromenane indigenous peoples to remain in voluntary isolation. The total surface area currently under State's protection amounts to 20% of Ecuador's territory, one of the highest percentages in the world.
- b) Reforestation, afforestation, natural regeneration, watershed management and appropriate management of one million hectares of forest. A substantial reduction in the current rate of deforestation considered to be one of the highest in South America.
- c) Promote social development in the Initiative's zones of influence, with programs that include health, education, training, technical assistance and productive job creation in sustainable activities, such as ecotourism, agriculture, protection of ecosystems' services and agro-forestry.
- d) Support research, science, technology and innovation with programs that enhance: i) the generation of goods and services based on bio-knowledge, ii) integrated river basin management, and iii) change in the energy matrix.

The Revenue Fund Window: the replenishments will be financed from the contributions to the Yasuni Fund account as well as from annual revenue payments received from National Entities for the use of the Capital Fund Window funds. The terms of repayments will be approved by the Steering Committee.

Government guarantee

UNDP indicated that In exchange for contributions, the Ecuadorian government will provide a guarantee to maintain the ITT field oil reserves in the ground indefinitely. The government will issue guarantee certificates, known as Yasuní Guarantee Certificates (CGYs), in US dollars equivalent to the face value of each contribution. Where the contribution is below \$50,000 (While the Yasuni - ITT TOR established a threshold of \$100,000 for issuing the Yasuni Guarantee Certificates (CGYs), the Yasuni ITT Trust Fund Steering Committee decided on 23 September 2011 to reduce the threshold amount to \$50,000), it shall constitute a donation to the Yasuní ITT Trust Fund and will not entitle the contributor to CGYs. However, an acknowledgement certificate for those contributing below \$50,000 will automatically be sent. The maximum total amount of CGYs issued by the government will be equivalent to the value of a total of 407 million metric tons of CO2 not emitted as a result of preserving the Yasuní ITT oil reserves. The CGY is an instrument that does not earn interest and does not have an expiration or maturity date as long as the government maintains its commitment not to exploit the Yasuní ITT oil reserves.

Ecuador has committed itself to keeping the oil under Yasuní in the ground indefinitely. However, if the international community cannot reach \$100 million by the end of 2011, Ecuador may have no choice but to exploit its country's natural resources for the sake of the welfare of its people. In exchange for the contributions received, the Government of Ecuador will provide a guarantee to maintain the ITT field oil reserves, within the National Park, underground indefinitely by issuing to contributors Yasuni Guarantee Certificates (CGYs) equivalent to the face value of contributions for contributions of US\$ 50,000 and above. The CGYs, which are national legal obligations recognized by the Ecuador Assembly as state bonds, will include the metric tons of CO2 avoided. In the unlikely scenario that in the future, the government of Ecuador decides to extract oil from the ITT field, the CGYs will be made redeemable and the State will lose ownership of the raised funds, which will be transferred back to the contributors. Where a contribution is below US\$ 50,000, it will be considered as a donation to the Yasuni Fund and will not entitle a Contributor to CGYs. The sum of contributions below the CGYs requirement, in the unlikely scenario of oil extraction, will be used for social programmes benefiting the area's inhabitants.

Governance

The Yasuni Fund Steering Committee

The Yasuní ITT Trust Fund will be governed by a Steering Committee chaired by a representative of the Government. The Steering Committee will have six full members: (i) three representatives of the Government, including the Chairperson with casting vote; (ii) two representatives from the Contributor Governments; and (iii) one Ecuadorian civil society representative, with UNDP Resident Representative/UN Resident Coordinator and the UNDP MPTF Office Executive Coordinator participating as ex officio members. The Steering Committee shall make decisions by majority, aiming to consensus with the Chairperson casting the deciding vote in case consensus is not reached.

The Yasuni Fund Technical Secretariat

The Technical Secretariat is an impartial entity providing administrative, technical and substantive support to the Steering Committee. It shall undertake four functions under one management structure: (i) Technical support; (ii) Project appraisal; (iii) Monitoring and evaluation; and (iv) Administrative support.

The Government Coordinating Entity

As the Government designated Government Coordinating Entity, the Ministry of Heritage through the Yasuni ITT Coordination Office, in cooperation with the National Secretary of Planning and Development, is responsible for the development, implementation and monitoring and evaluation of the Yasuni Fund portfolio implemented by national entities. It assumes full programmatic and financial accountability, on behalf of the Government, for activities implemented by the Recipient and Implementing Organizations.

National Recipient Organizations

Through the Government Coordinating Entity, National Recipient and Implementing Organizations will prepare proposals for funding and submit them to the Steering Committee for approval after review by the Technical Secretariat.

Anticipated level of funding

UNDP indicated that when President Rafael Correa originally proposed this plan in 2007, the oil in the ITT fields was valued at \$7.2 billion. Ecuador pledged to not drill if the international community would share with it the cost of the lost revenue. The goal to reach by 2024 is therefore \$3.6 billion, from governments, foundations, the private sector, and individuals. The balance of the lost revenue, currently estimated at more than \$5 billion based on current oil prices, will be Ecuador's contribution to the world. The Fund needs to receive \$100 million by 31 December 2011, to prove the plan's viability. If it does not receive this amount, according to the Yasuni Trust Fund Agreement signed with UNDP the government may terminate this historic initiative, in which case it has guaranteed to refund the contributors.

Moving forward

In January 2012, Science reported⁵ that after receiving pledges totaling more than its goal of \$100 million by a year-end deadline, the Ecuadorian government announced that it would move forward with the Yasuni ITT Initiative, an innovative plan to leave untapped more than 900 million barrels of crude oil beneath a pristine Amazonian nature reserve, in exchange for annual international donations. It was feared that Germany would back away from a nearly \$50 million pledge to the effort, but \$116 million in contributions has now been collected from it, other foreign governments, individuals, and foundations. The Ecuadorian government has now set a new goal of securing \$291 million in contributions in both 2012 and 2013 to keep the initiative going. The next step is to launch an aggressive advertising, social networking, and promotional campaign focused on Europe, North America, and Australasia - an attempt to put public pressure on elected officials, while also drawing upon the financial resources and discontent of a global population that finds itself increasingly frustrated with slow-paced climate negotiations.

Launched in mid-2010 after 3 years of technical consultation, the Yasuni ITT project was lauded by foreign governments and environmental groups as an innovative way to fight global warming: Not exploiting the Ishpingo-Tambococha-Tiputini (ITT) oilfields in Yasuni National Park will prevent the emissions of around 410 million metric tons of carbon dioxide—equivalent to the annual emissions of France and accounting for 20% of Ecuador's known oil reserves. The project could also prevent the extermination of at least two indigenous tribes that live in voluntary isolation, while conserving a forested area that scientists say is the most biodiverse place on earth.

⁵ With \$116 Million Pledged, Ecuador Moves Forward With Plan to Protect Rainforest, 13 January 2012, <http://news.sciencemag.org/policy/2012/01/116-million-pledged-ecuador-moves-forward-plan-protect-rainforest?ref=ra>

But for a variety of reasons, donor countries initially declined to support the initiative. Many have questioned commitment of Ecuador's President Rafael Correa, citing expanded oil and mining in other parts of the Amazon. Environmental campaigners are deeply concerned about stepped up drilling plans in other parts of the Ecuadorian Amazon but they see merit in supporting the Yasuni Initiative as a means by which to enable Ecuador to extricate itself from its current "oil debt trap." At present, Ecuador relies upon oil income for more than half of its annual export revenue.

Still another impediment has been fear that the initiative's "avoided emissions" strategy would lead to similar plans being considered as part of future global warming/climate change treaty negotiations. This last concern appeared to scare off Germany's Secretary for Economic Cooperation and Development Gudrun Kopp, who in June 2011 told a German parliamentary commission that "a direct payment into a fund of this type would set a precedent that could ultimately prove very costly." Germany is now tentatively back in the initiative, agreeing to a one-time, nonrefundable commitment of \$47 million in bilateral technical assistance to be paid over 3 years. The contribution is not an all out endorsement of Correa's vision, because Germany's monies will not pass through the UNDP Trust Fund but will be invested instead directly in the park. The other funding committed to the Ecuadorian Government amounted to approximately \$69 million, including pledges from provincial governments such as the Belgian region of Wallonia and the French department of Meurthe-et-Moselle. The Initiative was previously open to only governments and corporations pledging more \$100,000. Now, individuals and businesses wishing to contribute amounts as small as \$25 may become involved.

Closure

On 16 August 2013, UNDP stated⁶ that it took note of the decision adopted by the President of Ecuador to conclude the Yasuni-ITT Initiative. This Initiative was born as a national proposal, and the decision to conclude it is also a national prerogative. Upon the request of the government of Ecuador, UNDP provided support to this national initiative through: Administration of the Yasuni Trust Fund; Promotion and advocacy of the Initiative; Provision of technical support. The Yasuni Trust Fund has received commitments in the amount of \$52,227,852, out of which \$10,190,820 were deposited into its bank account.

In July 2013, President Correa formed a commission to evaluate the Yasuni-ITT Initiative's progress to date. The commission concluded that the economic results were not sufficient. He had also commissioned technical, economic and legal studies on the basis of which he would seek the backing of the national assembly for drilling in the region, a step required by the country's constitution⁷.

⁶ UNDP statement on decision by Government of Ecuador to conclude Yasuni-ITT Initiative, 16 August 2013

⁷ Alexandra Valencia: "Ecuador to open Amazon's Yasuni basin to oil drilling", Reuters, 16 August 2013.

The president of Ecuador⁸ said that a 3-year-old effort to raise \$3.6 billion from the international community to prevent development has failed. In 2010, Correa launched the so-called Yasuni-ITT Initiative, a 13-year plan under which the government would forgo drilling in the park in exchange for donations equaling one-half of the value of the oil, a sum that analysts put at \$3.6 billion. But the Yasuni Fund has collected just \$13 million in donations, forcing what the president called a reluctant decision to move ahead with drilling. “The world has failed us,” he said. “It was not charity that we sought from the international community, but co-responsibility in the face of climate change.” The announcement, rumored for months, drew immediate opposition from civil society and environmental groups, with many pledging to force a national referendum on the issue. Recent polls have suggested that up to 90% of Ecuadorians oppose drilling in the park, but those numbers could drop as pro-drilling forces make their case.

Correa said that oil development would have an impact on less than 1% of the park and that the government would take steps to protect the environment. Impacts could be minimized by the use of certain technologies: a technique called extended reach drilling, for instance, can minimize the number of drilling platforms, and narrow-width “green pipelines” can move oil with fewer ecological disruptions. But the inclusion of a 60-kilometer pipeline network to move the oil is a problem with Ecuador’s drilling plan. Skeptical researchers said that from experience, a road leads to loss or degradation of a swath of 5 to 8 kilometers wide, so the 1% figure across the entire Yasuni Biosphere Reserve would amount to 20,000 hectares. With over 100,000 species living in each hectare, a huge number of species and individuals could be affected. In particular, just 50 kilometers north of Yasuni, a half-century of oil development has left little nature intact, and other oil fields are being developed to the east and south, in effect surrounding Yasuni’s uncontacted tribes in the intangible zone.

⁸ Ecuador Says It Will Launch Controversial Drilling in Amazon Park, 19 August 2013, <http://news.sciencemag.org/environment/2013/08/ecuador-says-it-will-launch-controversial-drilling-amazon-park>