CALCULATION OF THE GENUINE PROGRESS INDICATOR FOR QUEBEC

NOTES FOR A SEMINAR AT THE INSTITUTE FOR URBAN AND ENVIRONMENTAL STUDIES, CHINESE ACADEMY OF SOCIAL SCIENCES

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THE PRESENTATION

I - BRIEF NOTES ON THE QUEBEC CONTEXTII - NEED FOR A NEW APPROACH, FOR THE GPIIII - CALCULATION OF THE GPI

I - BRIEF NOTES ON THE CONTEXT IN QUEBEC...

- SUSTAINABLE DEVELOPMENT ACT PASSED 2006
 - ARTICLE 1 RECOGNIZES QUEBEC'S DEVELOPMENT IS NOT SUSTAINABLE AND CALLS FOR A CHANGE OF COURSE
 - MANDATES ENVIRONMENT DEPARTMENT FOR
 IMPLEMENTATION
- SUSTAINABLE DEVELOPMENT STRATEGY 2007
 - NO QUANTIFIED OBJECTIVES
 - NO TIMELINES
 - NO INDICATORS

BRIEF NOTES...

- SUSTAINABLE DEVELOPMENT COMMISSIONER
 - AN ASSISTANT AUDITOR GENERAL, FOLLOWING THE EXAMPLE OF THE FEDERAL COMMISSIONER
 - AUDITS USING THE ESTABLISHED METHODOLOGY OF THE ACCOUNTING PROFESSION
 - REPORTS 2007 AND 2008 OF FEDERAL COMMISSIONER: TEN YEARS OF EXPERIENCE A FAILURE
- HLM: PROPOSAL TO CALCULATE AND USE A GPI AS A BASIC APPROACH REJECTED
 - TOO RISKY FOR AUDITOR GENERAL: THE ECONOMIC FOUNDATIONS NOT WIDELY ACCEPTED

II – NEED FOR A NEW APPROACH, THE GPI

- DECISIONS MADE GENERALLY ON THE BASIS OF DEPARTMENT OF FINANCE RECOMMANDATIONS FOR REQUIRED GROWTH
 - CALCULATION BY CDD OF QUEBEC'S ECOLOGICAL FOOTPRINT IN 2007: THREE PLANETS NEEDED
 - GROWTH NOT AN OPTION
- AUDITING OF GOVERNMENT REQUIRES PLACING ACTIONS IN A GLOBAL CONTEXT
 - GLOBAL CHALLENGES: CLIMATE CHANGE, WATER, ETC.
 - DEVELOPMENT TO BE SOUGHT WITH LESS RESOURCES, LESS ENERGY, REDUCED IMPACT

A CIVIL SOCIETY INITIATIVE

- DE-GROWTH DEBATE A NON-STARTER
 - **OPPOSITION OF HUGE MAJORITY OF ECONOMISTS**
 - NEGATIVE PERCEPTION BY POPULATION, CONFRONTING ITS UNLIMITED APPETITES
- INTERNATIONAL CONSENSUS THAT GDP IS A POOR INDICATOR OF DEVELOPMENT
 - STIGLITZ, OCDE, GADREY, OTHERS
 - CONTINUED USE OF GDP IN ABSENCE OF ALTERNATIVE, IN SPITE OF CONSENSUS
- DEMONSTRATE THE WEAKNESSES OF THE GDP
 - THE GPI METHODOLOGY IMPROVING OVER 20 YEARS

THE GENUINE PROGRESS INDICATOR

- TAKES AS A BASIS THE BENEFITS OF GROWTH AS CHARACTERIZED BY GDP
 - CONSUMPTION (PERSONAL EXPENSES) THE ULTIMATE INDICATOR, WITH G, I, E AND M AIMING AT THAT
- MAINTAINING THE MONETARY VALUE APPROACH, INTEGRATES THE COSTS AND BENEFITS OF NON-MARKET FACTORS
 - SUBSTRACTION OF COSTS OF SOCIAL AND ENVIRONMENTAL EXTERNALITIES
 - ADDITION OF MONETARY CONTRIBUTION OF NON-MARKET HOUSEHOLD AND VOLUNTEER WORK

CONTEXT AND WEAKNESSES OF THE GPI

- REPRESENTS WEAK SUSTAINABILITY IN ITS MONETIZING OF ALL THE FACTORS
 - STAYS WITHIN THE MARKET REALM
 - PROVIDES APPEARANCE OF REAL PROGRESS
- THEREFORE TAKES NO ACCOUNT OF SCALE
 - ECOLOGICAL FOOTPRINT THE INDICATOR OF SCALE
 - APPLIED IN CONCLUSION
- DOESN'T ADDRESS INEQUALITIES WITHIN AND AMONG COUNTRIES
 - GINI AN APPENDIX, TO AVOID PONDERATIONS

METHODOLOGICAL NOTES

III - CALCULATION OF THE GPI

- FROM A DEVELOPMENTAL PERSPECTIVE
 - PART I: TERRITORIAL DEVELOPMENT
 - AGRICULTURE, FORESTRY, MINING, FISHERIES, ESTABLISHMENT OF URBAN CENTERS
 - PART II: ECONOMIC ACTIVITIES INDEPENDENT OF THE TERRITORY
 - WORK AND UNEMPLOYMENT, NON-MARKET WORK
 - DEMOGRAPHIC CONCERNS
 - CLIMATE CHANGE
 - PART III: THE FINALITY OF DEVELOPMENT
 - HEALTH AND EDUCATION
 - INDEBTEDNESS OF GOVERNMENT AND INDIVIDUALS

1: PROTECTED AREAS

- NOT IN THE TRADITIONAL METHODOLOGY
 - THE REFERENCE FOR ALL OTHER ACTIVITY
 - JUDGED ESSENTIAL
- MEASUREMENT OF SOMETHING MISSING AS PER GOVERNMENT COMMITMENTS
 - IDENTIFICATION OF WEAKNESSES IN THE NETWORK, BY QUANTITY AND BY TYPE OF ECOSYSTEM REPRESENTED
 - COSTS A FUNCTION OF MISSING SURFACE AREA, USING VALUE OF LEAST VALUABLE ECOSYSTEM, FORESTS (AS PER USFWS)

2: FOREST CLEARING AND FORESTRY ACTIVITIES

- CONSERVATIVE: NO EFFORT MADE TO CALCULATE COSTS OF ELIMINATION OF DECIDUOUS FORESTS OF SOUTHERN QUEBEC, FOR AGRICULTURE
- DEGRADATION OF THE CONIFEROUS FOREST
 - CONTINUED USE OF REMAINING VIRGIN FOREST, LITTLE USE OF SECOND GROWTH
 - INCREASING DISTANCES FROM SAWMILLS/FACTORIES
 - INCREASINGLY SMALLER TREES AS CUTTING GOES NORTH
- VALUE DIMINISHING TO ZERO WITH DEGRADATION
 - DATA DIRECTLY FROM GOVERNMENT
 - ADAPTATION TO TAKE NOTE OF POOR EFFICIENCY
 - SUBTRACTION TO RECOGNIZE ABSENCE OF ANY RENT

COMPONENTS OF THE GPI FOR FORESTRY IN M\$ 2002



RESULTS GPI AND GDP FOR FORESTRY IN M\$ 2002



3: AGRICULTURE

- DATA SIMPLY NOT AVAILABLE
 - \$ COSTS OF EROSION AND COMPACTION, WATER POLLUTION, TOXIC RUNOFF, LOSS OF BIODIVERSITY
 - \$ COSTS OF LOSS OF VITALITY IN RURAL COMMUNITIES
- USE OF A PROXY TO ESTIMATE THE COSTS
 - INPUTS ASSOCIATED WITH INDUSTRIALIZATION OF AGRICULTURE, IN DIRECT RELATION WITH THE IMPACTS (INORGANIC FERTILIZERS, IMPORTED FEED AND REPRODUCIVE STOCKS, PESTICIDES AND PHARMACEUTICALS,
 - COMPARISON WITH US GPI THEY'RE EQUIVALENT
 - COMPARISON WITH GDP THEY'RE EQUIVALENT

• WITH THE SOCIAL COSTS, THE SUBTRACTIONS ARE GREATER THAN THE GDP

COMPONENTS GPI FOR AGRICULTURE IN M\$ 2002



RESULTS GPI AND GDP FOR AGRICULTURE IN M\$ 2002



4. MINING

- BASIC ARGUMENT IN ECOLOGICAL ECONOMICS: THE LOSS OF CAPITAL MUST BE CONSIDERED
 - FOLLOWING DALY (AND OTHERS): 100 % OF THE VALUE OF SHIPMENTS IS SUBTRACTED
 - EQUIVALENT TO NATIONALIZATION
 - FOLLOWS THE MODEL IN COUNTRIES WITH OIL AND GAS
 - DATA PUBLICLY AVAILABLE (VS. PROFITS, COSTS, ETC.)
- HUMAN COSTS IN A DANGEROUS ACTIVITY
 - VALUE OF PREMATURE DEATHS CAUSED BY ASBESTOS

CHALLENGE: WHERE AND HOW INVEST THE RENT (CF. THE HISTORY OF NAURU ISLAND)

COMPONENTS GPI FOR MINING IN M\$ 2002



RESULTS GPI AND GDP FOR MINING IN M\$ 2002



5. FISHERIES

- A WELL-KNOWN DISASTER
 - CONFLICTS FOR YEARS BETWEEN EXPERTS AND POLITICIANS AND FISHERS
 - OFTEN THE UNIQUE SOURCE OF LIVELIHOOD FOR COMMUNITIES
- DATA AVAILABLE FROM FISHERIES AND OCEANS
 - LANDINGS AND VALUE OF LANDINGS RISING, COUNTER TO THE SITUATION WITH THE STOCKS
 - ANNUAL AND CUMULATIVE LOSS OF REVENUE AN ATTEMPT TO ESTIMATE INDIRECTLY THE DEGRADATION OF THE STOCKS
- THE SMALLEST SUBTRACTION OF THE GPI, BUT THE MOST DRAMATIC: MARKETS FAILED TO INDICATE THE SITUATION ADEQUATELY

THE RESULTS FOR THE GPI



THE FISHERIES A MODEL FOR THE PLANET?



6. QUESTIONS RELATING TO URBANIZATION

• A DEPARTURE FROM THE METHODOLOGY

- NORMALLY, THE COSTS OF CONGESTION, CRIMINALITY, ACCIDENTS AND NOISE, DATA FOR WHICH ARE NOT ROBUST
- LOST OF AGRICULTURE LAND A CONSERVATIVE BUT APPROPRIATE ELEMENT OF COST
- SOCIAL COSTS, ANOTHER DEPARTURE IN METHOD
 - DATA AVAILABLE FOR INCREASES IN PREMATURE DEATH DUE TO AIR POLLUTION
 - BASIS FOR COSTING : STATISTICAL VALUE OF A HUMAN LIFE, FOLLOWING CANADIAN GOVERNMENT EVALUATION, NOT USED BEFORE IN THE GPI
- END RESULT, % OF PERSONAL EXPENSES, EQUIVALENT
 - GPI US (2006): 10,5%, GPI QUEBEC (2011): 10,2%

COSTS OF LOSS OF PRIME AGRICULTURAL LAND

	Annual Cumulative losses of production						Cumulative loss
farm	farmland	Oats	Barley	Corn	Soya	Hay	
1992	21 632	51 626 690	17 457 827	67 508 788	1 152 784	847 006 236	1 598 530 928,17
1993	21 151	52 040 638	18 238 384	71 722 235	1 681 815	860 541 113	1 623 435 909,53
1994	20 686	52 407 779	19 102 638	75 624 859	2 235 326	872 559 782	1 645 559 260,73
1995	20 236	52 902 133	20 101 687	80 776 175	2 874 254	882 838 750	1 667 001 948,53
1996	19 800	53 266 724	20 794 544	83 824 448	3 526 559	890 306 703	1 681 591 873,65
1997	39 595	54 024 200	22 392 996	92 069 892	5 402 144	910 560 039	1 719 349 887,81
1998	37 909	54 718 921	23 797 913	100 027 052	7 420 177	932 623 773	1 757 444 225,82
1999	36 329	55 423 744	25 290 199	108 444 670	9 652 345	956 348 082	1 796 941 430,74
2000	34 846	56 134 920	26 949 201	117 565 264	12 187 557	979 990 152	1 836 338 030,57
2001	33 451	57 068 209	28 710 906	127 701 349	14 877 273	1 001 502 324	1 873 867 299,28
2002	32 769	58 048 892	29 647 888	129 785 684	16 703 246	1 003 695 752	1 885 359 515,10
2003	32 114	58 785 929	30 446 784	131 750 330	18 682 505	1 005 971 896	1 896 427 077,01
2004	31 471	59 477 492	31 191 037	133 338 252	20 541 796	1 008 255 810	1 906 609 230,31
2005	30 842	60 350 260	32 123 466	135 394 905	22 606 851	1 011 119 577	1 919 040 456,10
2006	30 225	61 249 190	33 103 336	137 794 451	24 364 585	1 013 557 075	1 930 964 847,45
2007	29 621	61 923 828	33 973 011	140 156 493	25 889 620	1 015 354 886	

AIR POLLUTION: PARTICULATE MATTER



COSTS OF AIR POLLUTION: PARTICULATE MATTER



THE VALUE OF NON-MARKET WORK

- DATA AVAILABLE FROM STATISTICS CANADA, WHICH FOLLOWS THE SITUATION CLOSELY
 - IT INFLUENCES THE GDP
 - IT HAS TREMENDOUS VALUE IN ITS OWN RIGHT
- THE LARGEST SINGLE COMPONENT OF THE GPI, AND PROBABLY AN INDICATOR OF POST-GDP DEVELOPMENT

QUANTITATIVE PORTRAIT OF NON-MARKET WORK IN GPI



THE SOCIAL COSTS OF UNEMPLOYMENT

- A FUNDAMENTAL FAILING OF THE PRESENT SYSTEM
 - UNABLE TO ESTABLISH UNEMPLOYMENT AT A FRICTIONAL LEVEL
 - **PRODUCTIVITY IN QUESTION**
- A VARIANT IN THE METHODOLOGY
 - US GPI USES COSTS OF UNDEREMPLOYMENT
 - DIRECT COSTS OF UNEMPLOYMENT WIDELY RECOGNIZED IN QUEBEC
- THE CALCULATION
 - FIGURES FROM STATISTICS CANADA
 - COSTS IN RELATION TO EMPLOYMENT AT 3,5 %

THE SOCIAL COSTS OF UNEMPLOYMENT



THE IMPASSE OF CLIMATE CHANGE

- AN ENORMOUS DEBT OF RICH COUNTRIES INCURRED IN ALMOST BLIND UNAWARENESS
 - CALLS INTO QUESTION THE FUNDAMENTALS OF DEVELOPMENT
 - HAS COSTS WHICH ARE UNMANAGEABLE WITHOUT A CHANGE OF PARADIGM
- BAD CALCULATION OF THE DEBT BY THE RICH
 - THEY IMAGINE ONLY SMALL STEPS ARE POSSIBLE
 - THEY KNOW BIG STEPS ARE NEEDED
- THE GPI PROVIDES THE FIGURES IN A STRAIGHTFORWARD WAY

CONSUMPTION IS THE CHALLENGE...



...BUILDING ON CUMULATIVE EMISSIONS OF THE PAST



AND THE COST, JUDGED CONSERVATIVELY, IS HUGE



INDEBTEDNESS, TO MAKE MATTERS WORSE

- DEBT ASSUMED FOR DECADES AS RENDERED OF LITTLE IMPORTANCE, BY GROWTH AND INCREASES IN SALARIES
 - GROWTH IS PART OF THE SELF-DESTRUCTING PARADIGM
 - SALARIES HAVE NOT INCREASED IN RICH COUNTRIES FOR 30 YEARS
 - THE OFFICIAL DEBT, FOR GOVERNMENTS AND INDIVIDUALS, NEVER INCLUDES ECOLOGICAL DEBT
- METHODOLOGY
 - SUBTRACT ONLY THE INTEREST
 - THIS ONLY AN INDICATION OF A GREATER PROBLEM

GROWING INDEBTEDNESS EVEN AS CRISES ABOUND



NON MONETARY ISSUES FOR THE GPI

- TRANSPORTATION
- **DEMOGRAPHIC ISSUES**
- POINT-SOURCE WATER POLLUTION
- HEALTH AND EDUCATION ADVANCES

HEALTH AND EDUCATION IMPROVEMENTS

- IMPORTANT GAINS IN DIPLOMATION AT THE BACHELOR DEGREE LEVEL (ABOUT 21 YEARS OF AGE, 16 YEARS OF STUDY)
- IMPORTANT GAINS IN LIFE EXPECTANCY IN GOOD HEALTH (TO BE DISTINGUISHED FROM LIFE EXPECTANCY IN A STRICTLY QUANTITATIVE MODE)
- GAINS RESULTING FROM BOTH THESE BENEFITS FROM DEVELOPMENT ASSUMED TO BE INCLUDED IN THE GDP BASE, CONSUMPTION OR PERSONAL EXPENSES

BENEFITS IN HEALTH AND EDUCATION (M\$)



QUEBEC GPI 1970-2009 (M\$ 2002)



QUEBEC GPI PER CAPITA 1970-2009 (M\$ 2002)



ADJUSTMENT OF GPI TO RECOGNIZE INEQUALITY



