

**SUSTAINABLE DEVELOPMENT & THE KNOWLEDGE ECONOMY:  
PUBLIC POLICY AND PRODUCT INNOVATION**

**PRESENTED TO  
CSLC-IC CONFERENCE ON  
*CANADA IN THE 21<sup>ST</sup> CENTURY*  
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CHATEAU LAURIER**

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THANK YOU JERRY. I APPRECIATE THE OPPORTUNITY TO SHARE VIEWS WITH SUCH AN AUGUST ASSEMBLY OF INTELLECTUAL LEADERS AS YOU HAVE GATHERED ED FOR THIS COLLOQUIUM ON THE FUTURE.

IT IS INTERESTING TO NOTE THAT THE UNSIGNED PREFACE TO PROFESSOR COPELAND'S IC SPONSORED PAPER FOR THIS SESSION MAKES THE RATHER ASTONISHING OBSERVATION THAT HIS PAPER "CASTS A SPOTLIGHT ON AN IMPORTANT, ALBEIT SOMETIMES OVERLOOKED, ENVIRONMENTAL COMPONENT OF THE NATION'S ECONOMIC WEALTH." THIS IS ASTONISHING FOR TWO REASONS. 1) BECAUSE IT REVEALS OUR ANTHROPOCENTRIC BIAS, EVEN HUBRIS—AFTER ALL, THE ECONOMY IS A WHOLLY OWNED SUBSIDIARY OF THE ENVIRONMENT.... NOT THE OTHER WAY AROUND. WITHOUT THE RENEWABLE AND NON-RENEWABLE NATURAL RESOURCES OF THE ENVIRONMENT ... WE WOULD NOT HAVE THE SOCIAL PHENOMENON KNOWN AS THE ECONOMY. WITHOUT THE "ENVIRONMENTAL SERVICES" OF THE ATMOSPHERE, WATER AND SOIL, WE WOULD HAVE NOT EVEN HAVE LIFE.

WHICH LEADS TO THE SECOND REASON THIS STATEMENT IS ASTONISHING ... AND THAT IS THE FACT THAT THE STATEMENT IS LARGELY TRUE... THE ENVIRONMENT HAS IN THE PAST OFTEN BEEN OVERLOOKED WHEN CONSIDERING NATIONAL WEALTH, THE HEALTH OF SOCIETIES AND FUTURE PROSPECTS. FORTUNATELY, OVER THE LAST DECADE OR SO THIS PERCEPTION HAS CHANGED QUITE DRAMATICALLY AND NOW A GATHERING OF ECONOMISTS, SUCH AS THIS

ONE SPECULATING ON THE FUTURE, CANNOT OVERLOOK, AS THE INDUSTRY CANADA PREFACE CALLS IT, “THE ENVIRONMENTAL COMPONENT OF THE NATION’S ECONOMIC WEALTH”.

PROFESSOR COPELAND IS RIGHT WHEN HE CHARACTERIZES THE CANADIAN ENVIRONMENTAL POLICY EXPERIENCE AS BEING AS MUCH A SERIES OF FAILURES AS SUCCESSES. OFTEN THE EXPLANATION OF THE FAILURES LIES IN ECONOMIC POLICY ITSELF, AND PARTICULARLY IN THE INSTRUMENTS OF ECONOMIC POLICY. BUT IT ALSO INCLUDES FACTORS OF GOVERNANCE, POLITICAL WILL AND INTERGOVERNMENTAL AND INTERDEPARTMENTAL COORDINATION.

HE IS CONCERNED THAT AS THE WORLD PASSES THE 6 BILLION PEOPLE MARK, AS WE JUST DID, ON ITS WAY TO 10 BILLION BY MID 21ST CENTURY, AS INDUSTRIAL PRODUCTION GROWS AND CONSUMPTION INCREASES WORLDWIDE THE STRESSES PLACED ON THE MOTHER-COMPANY’S CARRYING CAPACITY BY THE SUBSIDIARY WILL BECOME SEVERE. HE IS ALSO RIGHT IN ARGUING THAT THE MOST SERIOUS STRESSES ARE GLOBAL AND WILL BE FELT IN THE DEVELOPING WORLD. THE 21<sup>ST</sup> CENTURY WILL SEE DEEPENING STRUGGLES IN THE DEVELOPING WORLD OVER ENVIRONMENTAL SERVICES (FRESH WATER, PRODUCTIVE SOILS, WOOD, AND THE FOOD AND MEDICINAL PRODUCTS OF BIODIVERSITY). BUT AS WE ALSO KNOW, BECAUSE WE CAN ALREADY SEE IT HAPPENING, THE FLOOD OF HUMAN REFUGEES THAT WILL FLOW FROM THESE STRUGGLES WILL IMPACT ON THE OECD WORLD AS WELL.

I COMMEND PROFESSOR COPELAND'S PAPER TO YOU AND IN PARTICULAR SUPPORT HIS ARGUMENT FOR THE NEED TO LAUNCH AN INTELLIGENT REVIEW OF THE TAX SYSTEM. WHILE IT HAS TRADITIONALLY HAS BEEN VIEWED AS AN ECONOMIC INSTRUMENT... THE TAX SYSTEM IS EVERY BIT AS MUCH AN ENVIRONMENTAL AND SOCIAL INSTRUMENT. THUS, IT IS A KEY INSTRUMENT OF SUSTAINABLE DEVELOPMENT. IT IS NOW TIME TO CONSIDER A WHOLESALE SHIFT IN OUR TAX SYSTEM AWAY FROM EMPLOYMENT AND INCOME TAXES TO EMISSION AND CONSUMPTION TAXES. WE HAVE THE OPPORTUNITY TO RAISE REQUIRED GOVERNMENT REVENUES, WHILE MAXIMIZING SOCIAL BENEFIT, MINIMIZING ENVIRONMENTAL DAMAGE AND REDUCING CURRENT DISTORTIONS AND DISINCENTIVES BY GETTING THE PRICE SIGNALS RIGHT.

PROFESSOR COPELAND IDENTIFIES TWO MAJOR CHALLENGES FOR THE IMMEDIATE FUTURE:

FIRST, TO TRANSLATE THE "CONCEPT OF SUSTAINABLE DEVELOPMENT INTO A CONSISTENT SET OF POLICIES THAT CAN ADDRESS THE NEED TO MOVE THE ECONOMY IN A DIRECTION CONSISTENT WITH ECOLOGICAL CONSTRAINTS". (III) THE SECOND IS TO ASSIST IN THE INTERNATIONAL RESPONSE TO THE 'LOOMING GLOBAL ENVIRONMENTAL CRISIS THAT CANADA, ON ITS OWN, CAN DO LITTLE ABOUT.'" (III)

IN MY REMAINING FEW MINUTES, I WILL FOCUS ON TWO ISSUES RELATED TO PROFESSOR COPELAND'S FIRST CHALLENGE – IMPLEMENTING SUSTAINABLE DEVELOPMENT. SPECIFICALLY, I WANT TO DRAW YOUR ATTENTION TO TWO FUNDAMENTAL 21<sup>ST</sup> CENTURY PUBLIC POLICY CHALLENGES RELATED TO IMPLEMENTING SUSTAINABLE DEVELOPMENT. PROFESSOR COPELAND HINTS AT ...BUT DOES NOT DEVELOP THESE. IN FACT, HIS PAPER SHOWS A LACK OF APPRECIATION FOR RECENT DEVELOPMENTS IN BOTH AREAS – ONE OF WHICH CANADA IS A WORLD LEADER IN ... THE OTHER OF WHICH CANADA IS A FOLLOWER.

THE FIRST IS RELATED TO GOVERNANCE AND POLICY DEVELOPMENT, THE OTHER TO INDUSTRIAL PRACTICE AND INNOVATION. THE TWO ARE RELATED AND BOTH ARE FUNDAMENTAL COMPONENTS OF THE KNOWLEDGE BASED ECONOMY. TOGETHER THEY ARE SHOWING HOW SUSTAINABLE DEVELOPMENT CAN BE PRAGMATICALLY APPLIED IN THE REAL WORLD ACTIONS OF GOVERNMENTS, FIRMS AND INTERNATIONAL ORGANIZATIONS.

1. THE FIRST POLICY CHALLENGE IS TO DEEPEN AND EXTEND INSTITUTIONAL INNOVATIONS NOW UNDERWAY.

RECENTLY THE FEDERAL GOVERNMENT COMMITTED ITSELF TO INSTITUTIONALIZING SUSTAINABLE DEVELOPMENT IN THE CORE POLICIES, OPERATIONS AND PROGRAMS OF FEDERAL DEPARTMENTS. THIS IS TO BE DONE

BY LEGALLY REQUIRING DEPARTMENTS TO CREATE AND IMPLEMENT SUSTAINABLE DEVELOPMENT STRATEGIES, THAT WILL BECOME FUNDAMENTAL PLANNING DOCUMENTS FOR THE MANDATE OF THE DEPARTMENT, SIMILAR TO AND INTEGRATED WITH DEPARTMENTAL BUSINESS PLANS. THE LIBERALS CREATED A NEW OFFICER OF PARLIAMENT, INDEPENDENT OF THE EXECUTIVE, TITLED THE COMMISSIONER OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT, TO OVERSEE AND ASSESS DEPARTMENT'S PERFORMANCE. THE FIRST GENERATION SUSTAINABLE DEVELOPMENT STRATEGIES WERE TABLED BY MINISTERS IN THE HOUSE OF COMMONS IN DECEMBER 1997. THE SECOND GENERATION IS DUE BY DECEMBER 2000.

THIS IS AN EXTREMELY IMPORTANT INSTITUTIONAL INNOVATION AND ONE IN WHICH CANADA IS A WORLD LEADER. THIS IS POTENTIALLY A PROFOUNDLY SIGNIFICANT 'COMMITMENT DEVICE' TO USE PROFESSOR COPELAND'S PHRASE, TO HELP "OVERCOME THE SHORT TERM RE-ELECTION HORIZONS [THAT] COMBINED WITH UNEVEN DISTRIBUTIONAL EFFECTS OF ENVIRONMENTAL PROBLEMS CAN EXPOSE GOVERNMENTS TO CONSIDERABLE PRESSURE TO DEAL WITH SHORT TERM INCOME AND EMPLOYMENT CONCERNS AT THE EXPENSE OF LONG RUN SUSTAINABILITY ISSUES." (III)

THIS IS STILL VERY EARLY DAYS IN THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT IN THE POLICIES AND OPERATIONS OF THE FEDERAL GOVERNMENT. CHANGES IN SYSTEM THINKING HAVE SLOWLY BEGUN TO

EMERGE. AS DEPARTMENTS MOVE TOWARD THEIR SECOND SUSTAINABLE DEVELOPMENT STRATEGIES IN 2000, THEY ARE BEGINNING TO LINK THE STRATEGIES WITH OTHER FRAMEWORK DOCUMENTS SUCH AS DEPARTMENTAL BUSINESS PLANS AND PERFORMANCE REPORTS IN ORDER TO INTEGRATE DEPARTMENTAL FUNCTIONS, RESPONSIBILITIES AND OUTCOMES. THE ADOPTION OF 'ENVIRONMENTAL MANAGEMENT SYSTEMS' BY SOME DEPARTMENTS HAS HELPED IN THE 'GREENING OF OPERATIONS'. THIS ENCOURAGES DEPARTMENTS TO BE PRO-ACTIVE IN REDUCING ENERGY AND WATER CONSUMPTION; ENGAGE IN GREEN PROCUREMENT; ENHANCE VEHICLE FLEET MANAGEMENT; REDUCE NON-HAZARDOUS WASTE PRODUCTION; STRENGTHEN RECYCLING; AND IMPROVE HAZARDOUS WASTE MANAGEMENT. WHILE PERFORMANCE HAS VARIED AMONGST DEPARTMENTS, THE COMMISSIONER NOTED IN HIS SECOND REPORT THAT DEPARTMENTS WERE GENERALLY MORE ADVANCED IN GREENING THEIR OPERATIONS THAN IN INTEGRATING SUSTAINABLE DEVELOPMENT INTO POLICY AND PLANNING.

THERE ARE A NUMBER OF REASONS FOR THIS ... AND THE COMMISSIONER HAS HIGHLIGHTED TWO FUNDAMENTAL WEAKNESSES OF THE FIRST GENERATION STRATEGIES. FIRST, ALMOST ALL THE DEPARTMENTS FAILED TO SET CLEAR TARGETS THAT COULD BE USED TO JUDGE WHETHER OR NOT THE STRATEGY IS BEING SUCCESSFULLY IMPLEMENTED. SECOND, MANY OF THE STRATEGIES WERE MORE A RESTATEMENT OF THE STATUS QUO THAN A COMMITMENT TO CHANGE. STILL, WE ARE DOING THIS IS CANADA AND THAT IS IMPORTANT. SENIOR

OFFICIALS IN DEPARTMENTS HAVE TO TAKE THIS COMMITMENT SERIOUSLY AND RETHINK THEIR MANDATE THROUGH THE SUSTAINABLE DEVELOPMENT LENS. EVEN WHEN THEY DO SO, HOWEVER...THIS SECTORAL APPROACH IS NOT ENOUGH.

BOTH THE COMMISSIONER AND THE FORMER CLERK OF THE PRIVY COUNCIL, JOCELYN BOURGON, HAVE CITED HORIZONTAL COORDINATION PROBLEMS AS A MAJOR CONSTRAINT ON THE EFFICIENT IMPLEMENTATION OF PUBLIC POLICY. THEREFORE, OVER THE NEXT 2-4 YEARS THE FEDERAL GOVERNMENT MUST DEVELOP A 'CHAPEAU' OR UMBRELLA SUSTAINABLE DEVELOPMENT STRATEGY FOR THE FEDERAL GOVERNMENT AS A WHOLE, TO ENSURE THE INTEGRATION OF THE DEPARTMENTAL STRATEGIES. THE DM COMMUNITY IS BEGINNING TO GRAPPLE WITH THIS SYSTEMIC ISSUE ... AND THEY MUST CONTINUE TO DO THIS FORMATIVE WORK.

## 2. SUPPORTING INNOVATION IN THE PRIVATE SECTOR

THE SECOND AREA [AND HERE CANADA IS MORE OF A FOLLOWER, BUILDING ON INNOVATIVE DEVELOPMENTS IN THE EU AND THE US], HAS TO DO WITH INDUSTRIAL PRODUCTION PROCESSES AND MANAGEMENT SYSTEMS. THIS IS GENERALLY REFERRED TO AS SUSTAINABLE PRODUCTION AND IS THE BUSINESS RESPONSE TO IMPLEMENTING SUSTAINABLE DEVELOPMENT.

THERE HAS BEEN A SEA CHANGE IN THINKING IN THE '90S WITH RESPECT TO THE ENVIRONMENTAL AND SOCIAL ASPECTS OF INDUSTRIAL ACTIVITY AND LEADING COMPANIES HAVE EMBRACED ADVANCED ENVIRONMENTAL TOOLS AS A MEANS TO ACHIEVE COMPETITIVE ADVANTAGE. A RANGE OF NEW CONCEPTS HAS BEEN DEVELOPED TO CONCEPTUALIZE AND IMPLEMENT SUSTAINABLE MODES OF PRODUCTION. HENCE, THE WHOLE PRODUCTION PROCESS IS NOW BEING RE-EXAMINED THROUGH THE LENS OF CONCEPTS SUCH AS ECO-EFFICIENCY, PRODUCT STEWARDSHIP, INDUSTRIAL ECOLOGY, LIFE CYCLE ANALYSIS, ENVIRONMENTAL MANAGEMENT SYSTEMS, DESIGN FOR ENVIRONMENT, ECO-INDUSTRIAL PARKS, INTEGRATED PRODUCT POLICY, EXTENDED PRODUCER RESPONSIBILITY, AND SUPPLY CHAIN MANAGEMENT.

NUMEROUS CASE STUDIES HAVE SHOWN THAT LEADING COMPANIES HAVE TRANSLATED THE ENVIRONMENT FROM A MARGINALIZED MANAGEMENT CONCERN INTO A STRATEGIC ISSUE THAT RELATES DIRECTLY TO EFFICIENCY AND COMPETITIVENESS. FIRMS THAT HAVE MOVED BEYOND COMPLIANCE TO EMBED ENVIRONMENTAL AND SUSTAINABILITY ISSUES INTO THEIR CORE BUSINESS PRACTICES ACHIEVE A NUMBER OF BENEFITS, SUCH AS:

- REDUCTIONS IN OPERATING COSTS;
- PRODUCTION AND PROCESS IMPROVEMENTS;
- REDUCED LIABILITY AND RISKS;

- ENHANCED BRAND IMAGE;
- INCREASED EMPLOYEE MORALE;
- INCREASED OPPORTUNITY FOR INNOVATION;
- INCREASED OPPORTUNITY FOR REVENUE GENERATION – THROUGH NEW MARKETS AND PRICE PREMIUMS;
- BETTER SUPPLY CHAIN MANAGEMENT AND BETTER RELATIONSHIPS WITH CUSTOMERS.

SUCH COMPANIES, PRECISELY BECAUSE THEY HAVE THOUGHT SYSTEMATICALLY ABOUT THEIR OPERATIONS, ARE ALSO MORE EFFICIENT, MORE COMPETITIVE, MORE PROFITABLE, BETTER MANAGED, AND BETTER VALUE FOR SHAREHOLDERS.

AS YOU KNOW, THE WORLD'S POPULATION IS EXPANDING AND MANY PARTS OF THE WORLD ARE EXPERIENCING HIGH POLLUTION LEVELS AND ENERGY, WATER AND NATURAL RESOURCE CONSTRAINTS. AS A RESULT, A BOOMING INTERNATIONAL MARKET IS EMERGING FOR PRODUCTS AND SERVICES THAT USE LESS ENERGY AND MATERIAL RESOURCES, ARE NON-POLLUTING AND CAN BE EASILY RECYCLED OR REUSED

LET ME FOCUS ON JUST ONE EXAMPLE FROM THE ABOVE LIST OF CONCEPTS: INTEGRATED PRODUCT POLICY. INTEGRATED PRODUCT POLICY HAS RECENTLY EMERGED AS A UNIFYING CONCEPT THAT BRINGS TOGETHER CHANGES IN

MANAGEMENT SYSTEMS WITH A PRODUCT SYSTEM PERSPECTIVE BY INTEGRATING A VARIETY OF POLICIES AND PROGRAMS ACROSS THE FULL PRODUCT LIFE CYCLE.

INTEGRATED PRODUCT POLICY HAS BEEN DEFINED AS “PUBLIC POLICY, WHICH EXPLICITLY AIMS TO MODIFY AND IMPROVE THE ENVIRONMENTAL PERFORMANCE OF PRODUCT SYSTEMS”.

THE QUESTION FOR THE 21<sup>ST</sup> CENTURY, IS HOW CAN CANADIAN PUBLIC POLICY SUPPORT AND REINFORCE THE TRANSITION TO SUSTAINABLE PRODUCTION SYSTEMS. WHILE I ONLY HAVE TIME TO MENTION THEM HERE, THERE ARE A NUMBER OF ‘TOOLS’ IN THE ‘TOOL BOX’ THAT GOVERNMENTS CAN UTILIZE TO PROMOTE SUSTAINABLE PRODUCTION.

1) THERE ARE A NUMBER OF INNOVATIVE VOLUNTARY INITIATIVES EMERGING BY WHICH GOVERNMENTS CAN FACILITATE THE PRIVATE SECTOR “IMPROVING ENVIRONMENTAL PERFORMANCE WITHOUT SACRIFICING MARKET EFFICIENCIES”.

2) THERE IS A CRYING NEED FOR GOVERNMENTS TO PLAY AN IMPORTANT INFORMATION AND KNOWLEDGEWARE ROLE. INNOVATION IN THE PRIVATE SECTOR REQUIRES NEW TOOLS AND DATA. GOVERNMENTS CAN HELP BUILD CAPACITY FOR SUSTAINABLE DEVELOPMENT INNOVATIONS IN KEY INSTITUTIONS SUCH AS CANADIAN INDUSTRY, UNIVERSITIES AND GOVERNMENTS THEMSELVES.

WE DESPERATELY NEED TO BUILD OUR HUMAN-INTELLECTUAL CAPACITY IN THIS AREA IN ALL CANADIAN SECTORS OVER THE NEXT 5-10 YEARS.

3) GOVERNMENT MUST CONTINUE TO PLAY A ROLE IN BASIC SCIENCE AND TECHNOLOGY DEVELOPMENT. HERE, THERE WILL LIKELY BE AN INCREASING RELIANCE ON COLLABORATIONS OF FEDERAL AGENCIES, INDUSTRY AND ACADEMIA.

4) ECONOMIC AND FINANCIAL INSTRUMENTS WILL HAVE TO BE REORIENTED AND EMPLOYED TO BETTER ACCOUNT FOR THE FULL COST OF USING ENVIRONMENTAL SERVICES. TAXES AND CHARGES CAN PLAY A ROLE IN PROVIDING FINANCIAL INCENTIVES FOR CONSUMERS TO SUPPORT THE DIFFUSION OF INNOVATIVE PRODUCTS THROUGHOUT THE ECONOMY.

5) INTEGRATED PRODUCT POLICY BECAUSE OF ITS FOCUS ON THE ENTIRE LIFE CYCLE OF THE PRODUCT (RATHER THAN SIMPLY ON SPECIFIC FACILITIES, OPERATIONS OR SUBSTANCES) WILL REQUIRE A REFINING OF THE REGULATORY SYSTEM.

IN CONCLUSION, WE HAVE OPPORTUNITIES TO STRENGTHEN AND DEEPEN INSTITUTIONAL CHANGES AND INNOVATIVE PRACTICES IN PURSUIT OF

SUSTAINABLE DEVELOPMENT ... BUT WE CONTINUE TO FACE BARRIERS... AS OFTEN ECONOMIC, POLICY AND PSYCHOLOGICAL AS TECHNICAL.

BUT SOCIAL CHANGE IS ALWAYS A SLOW, ITERATIVE PROCESS ... WITH STEPS FORWARD AND STEPS BACK.

YET, WE HAVE NO CHOICE BUT TO CHANGE ... ISSUES OF INTERGENERATIONAL EQUITY, RESOURCE STEWARDSHIP AND SOCIAL RESPONSIBILITY WILL KEEP SUSTAINABLE DEVELOPMENT IN THE FOREFRONT OF DECISION-MAKERS STRATEGIC CONSIDERATIONS IN THE 21<sup>ST</sup> CENTURY.

THANK YOU

IF I MAY BE PERMITTED A SMALL ADVERTISEMENT:

FOR THOSE OF YOU INTERESTED IN RESEARCH AND POLICY QUESTIONS RELATED TO THE LINKS BETWEEN SCIENTIFIC INQUIRY, TECHNOLOGICAL DEVELOPMENT AND INDUSTRIAL INNOVATION, THE CARLETON RESEARCH UNIT IN INNOVATION, SCIENCE AND ENVIRONMENT POLICY AT CARLETON UNIVERSITY WILL BE HOLDING A MAJOR CONFERENCE ON “SUSTAINABLE PRODUCTION AND THE KNOWLEDGE ECONOMY IN CANADA: PUBLIC POLICY AND PRIVATE PRACTICE” A YEAR FROM NOW ... IN SEPTEMBER, 2000..