



UNIVERSITY OF  
**REGINA**

# Impacts on Local, Regional and National Innovation

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# Partnerships

- ◆ **Nature of partnerships**
  - ◆ Collaborative research oriented
  - ◆ Innovation research that meets industry needs, resulting in IP creation and commercialization (licensing)
  - ◆ Focus on renewable/sustainable energy e.g. Carbon Capture (ITC) and Storage (PTRC, IPAC-CO<sub>2</sub>)
- ◆ **Impact of CFI support on partnership**
  - ◆ CFI involvement in the \$12m ITC Centre (CFI @ \$4.5 M for ITC equipment) contributed to the results:
    - ◆ ITC attracts top researchers & grad students
    - ◆ 9 Patents and more coming
    - ◆ ITC Licensing Agreements signed with HTC/Doosan (~\$5M/project in royalties)
    - ◆ IPAC-CO<sub>2</sub> started (\$25 M project) 50% government 50% industry
    - ◆ Partnership with PTRC
    - ◆ Clean green fuels e. g. hydrogen multi-million production facilities
- ◆ **Is ITC consortium an industrial cluster?**
  - ◆ Evolving research cluster with industry support, not industry cluster
  - ◆ Early days, evolving industry cluster
- ◆ **Evidence of an evolving cluster**
  - ◆ Set up SWI and CVI for emerging clusters.
  - ◆ HTC and Doosan new hires and location in Innovation Place





# Technology Transfer

- ◆ **University of Regina**
  - ◆ University Industry Liaison Office (UILO)
  - ◆ Climate Ventures Inc.
- ◆ **Community**
  - ◆ SpringBoard West Innovations
  - ◆ Entrepreneurial Foundation
- ◆ **International**





# Knowledge Transfer - Other

- ◆ **Early days but we are getting traction**
- ◆ **We are positioning our R&D to solve global problems**
- ◆ **Paving way for commercial launch**
  - ◆ Founding member and lead development of SpringBoard West Innovations
  - ◆ Co-located UILO within SpringBoard West Innovations
  - ◆ Established Climate Ventures Inc.
- ◆ **Educating policy makers and the public**
- ◆ **e. g. - Dr. Malcolm Wilson's work leads to commercialization**
  - ◆ Founding Member of ITC and PTRC
  - ◆ Founding member of IPAC-CO<sub>2</sub>
  - ◆ Proponent and lead in the Sask-Montana CCS Project
  - ◆ Proponent and lead in a planned Sustainable Energy Institute
  - ◆ Proponent and lead in the Energy & Environment Consortium located within SpringBoard West Innovation's facility





# Socio-Economic Benefits

## CAPTURE

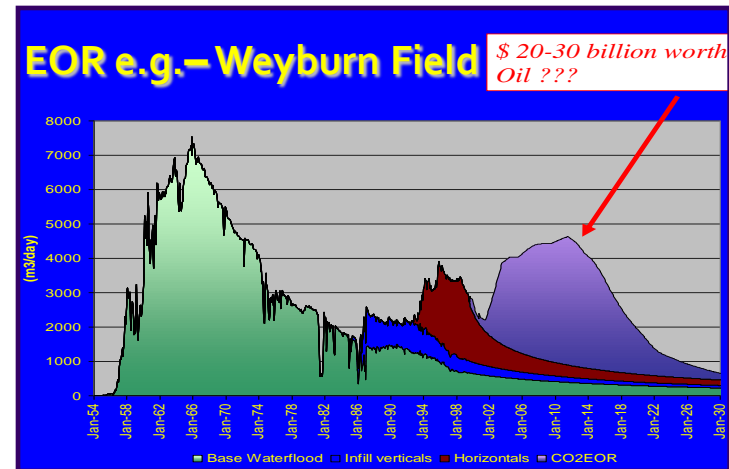
- ◆ **International Test Centre for CO<sub>2</sub> Capture (ITC)**
  - ◆ ~ \$25 million industry research consortium
  - ◆ 20-40% CCS cost reductions achievable through replication
  - ◆ UofR has reduced CO<sub>2</sub> capture cost from \$55/ton to < \$20/ton
  - ◆ CCS Reference Projects now being planned to prove costs
  - ◆ Now seeing pre-commercial developments
    - ◆ Australia, Canada, Germany, Norway, UK, & USA
  - ◆ HTC/Doosan License for CCS Technologies
    - ◆ ~ \$5 m/CCS project sold
    - ◆ HTC ~15 new hires
    - ◆ Doosan establishing a CCS company, ~18 engineers in Regina

## STORAGE

- ◆ **International Performance Assessment Centre for CO<sub>2</sub> Storage (IPAC-CO<sub>2</sub>)**
  - ◆ A CO<sub>2</sub> supply/storage risk assessment and validation infrastructure will develop
- ◆ **Petroleum Technology Research Centre (PTRC)**
  - ◆ Weyburn/Midale Project begun in 2000: \$80 million project

## ENHANCED OIL RECOVERY (EOR)

- ◆ **PTRC EOR Program with SRC as industry led program**
- ◆ **Now Business Lead NCE**
  - ◆ \$53 m program
- ◆ **\$1 b royalties from oil & gas (largest contributor)**
- ◆ **E.g. Weyburn Field**
  - ◆ New technology leads to increased and sustained oil recovery







## e. g. Industry Impact on Research Capacity - HTC

### \$ Value of HTC Investments in the U of R

DIRECT CONTRIBUTIONS	\$ AMOUNT (ooo's)
HTC Clean Energy –Chair	\$1,237
HTC H <sub>2</sub> R&D	\$350
ITC Consortium R&D	\$238
Boundary Dam Pilot Plant	\$94
140,000 shares @ \$3.00	\$420
<u>H<sub>2</sub> Pilot Plant</u>	<u>\$7,000</u>
<b>TOTAL</b>	<b>\$ 9,339</b>





## e. g. **Industry Impact on Research Capacity - HTC**

### **\$ New Product Development Projects Funded by HTC**

**PROJECT**

**\$ AMOUNT (ooo's)**

- ◆ **Square Absorber & Stripper Columns** **\$50-60**
- ◆ **Mixed Amine Solvent Reclaimer** **\$180-230**





## e. g. **Industry Impact on Research Capacity - HTC**

### \$ Future Royalty Licensing Revenue

#### PROJECTS

- ◆ **Hydrogen Technology Royalties: 1% - 4% of Gross Sales**  
**Estimate \$ 1 million at \$ 10 k - \$40 k per unit**
- ◆ **CO<sub>2</sub> Capture Royalties: 40% of Gross Royalties per project**  
**Estimate \$10 - \$20 million at \$4 - \$8 million per project**

